SERVICE MANUAL
& PARTS LIST (without price)

BN-10 (ZX-456)
BN-20 (ZX-457)

NOV. 1997

INDEX

CASIO®

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1. SPECIFICATIONS

Model: BN-10/BN-20

Main Modes:
SCHEDULER (SCHEDULE, TO DO, REMINDER); CONTACTS; MEMO; EXPENSE MANAGER; SPREADSHEET; CLOCK (Home Time, World Time); Pop-Up Tool (Calculator, Clock)

Data storage:
Storage and recall of SCHEDULE, TO DO, REMINDER, CONTACTS, MEMO, EXPENSE data; calendar display; secret memory area; editing; memory status display

Clock:
World Time; SCHEDULE alarm; TO DO alarm; REMINDER alarm; Daily Alarm; accuracy under normal temperatures: ±3 seconds per day

Calculations:
12-digit arithmetic calculations; arithmetic constants (+/–/× /÷); independent memory; percentages; square roots; 24-digit approximations; other mixed calculations

General:

Display: 319 × 160 dots

Memory capacity: 1MB (BN-10)
2MB (BN-20)

Main component: LSI

Power supply: Two AA-size alkaline batteries (Type: LR6 (AM3)) or optional AD-A70140 AC adaptor

Battery life: (Ambient Temperature: 20 °C)

BN-10:
- Approximately 100 hours of continuous display only in the CONTACTS Mode
- Approximately 80 hours with 55 minutes of continuous display only and 5 minutes of processing operation per hour in the CONTACTS Mode
- Approximately 500 minutes, continuous connection of optional fax modem

BN-20:
- Approximately 100 hours of continuous display only in the CONTACTS Mode
- Approximately 80 hours with 55 minutes of continuous display only and 5 minutes of processing operation per hour in the CONTACTS Mode
- Approximately 65 hours with 55 minutes of continuous display only and 5 minutes of processing operation per hour in the CONTACTS Mode, plus 3 minutes of backlight operation per hour during continuous display only period
- Approximately 500 minutes, continuous connection of optional fax modem

Power consumption: 0.6 W (MAX) 0.4 W (TYP)

Current consumption: at battery voltage = 3 V, at data transmission with MODEM

Typical value	Maximum value
146 mA	200 mA

Note: Value measured actually
139 mA (at battery voltage = 3 V, at data transmission with MODEM)
74 mA (at AC Adapter = 5 V, at data transmission with MODEM)

Low power voltage: See to SCHEMATIC DIAGRAMS
- Battery voltage (T651(VCC) – T652(GND))
  2.1 V ± 2.0 % – Low battery message appears
  1.6 V ± 2.0 % – Forced power off
- AC Adapter voltage (T661(VCC)–T652(GND))
  4.5 V ± 2.0 % – Forced power off

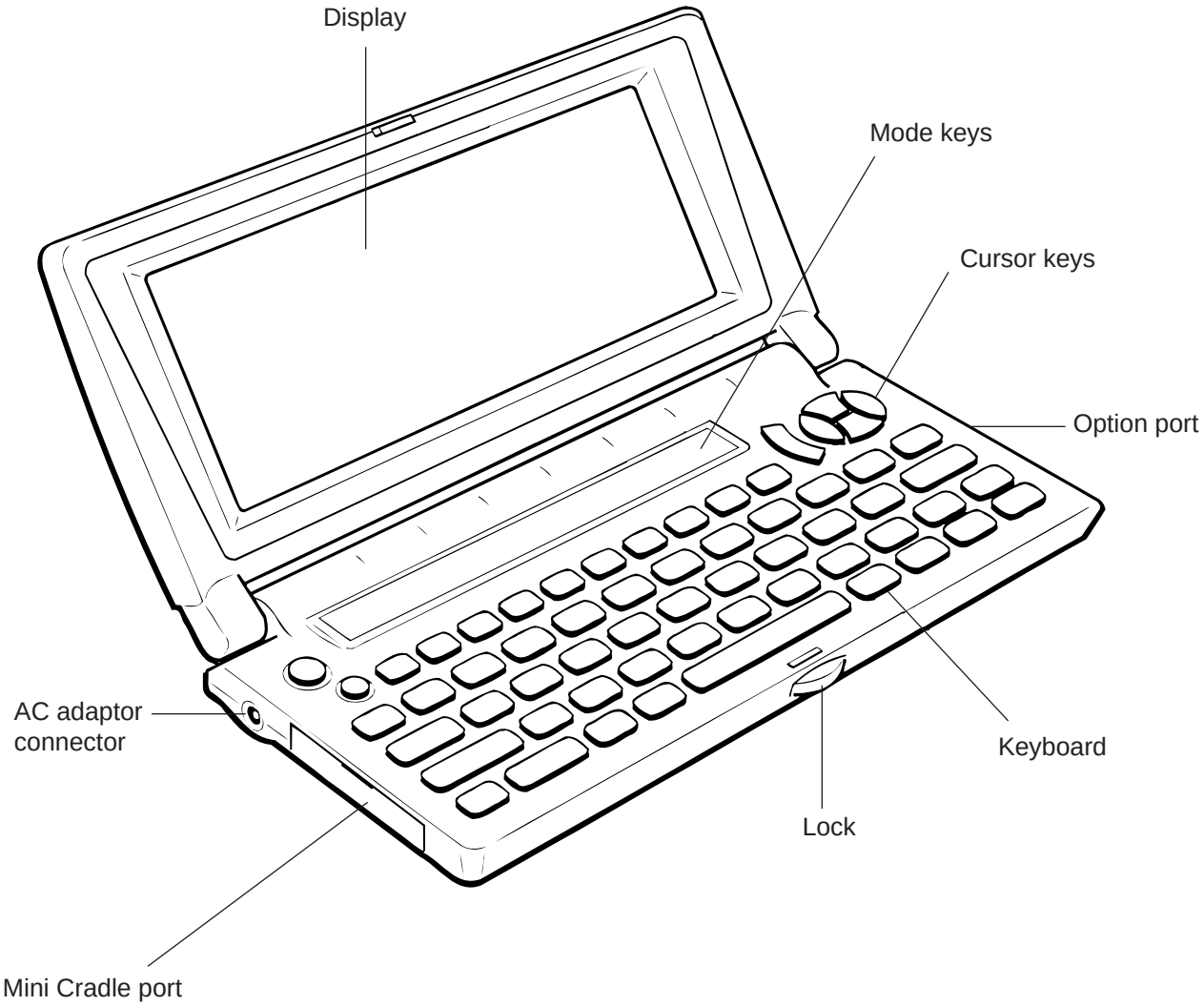
Auto power off: Approximately 6 minutes after last key operation

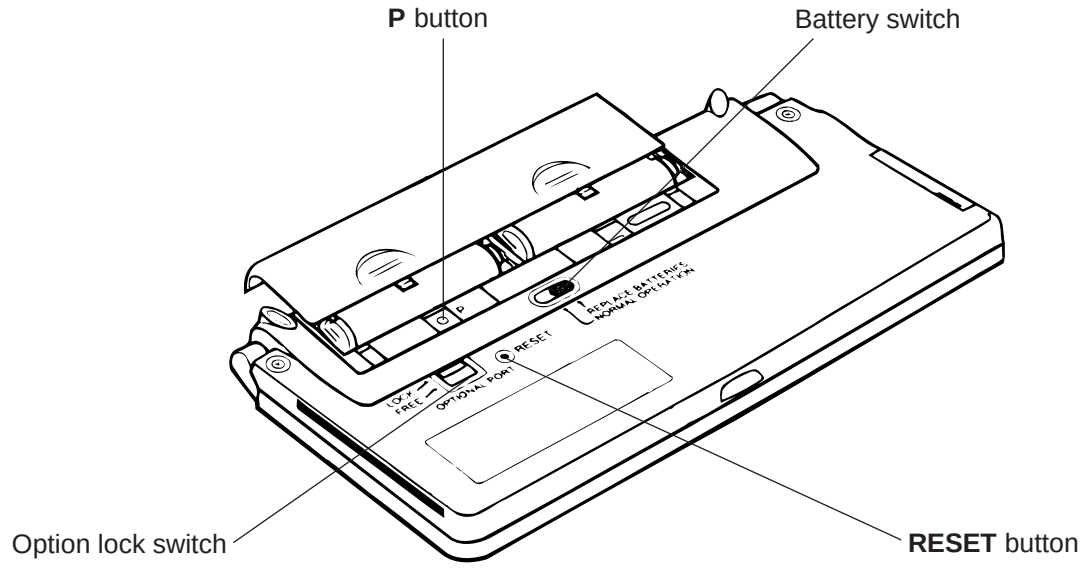
Operating temperature: 0 °C ~ 40 °C (32 °F ~ 104 °F)

Dimensions:
Unfolded: 11H × 167W × 162.5D mm (3/8"H × 6 5/8"W × 6 3/8"D)
Folded: 22H × 167W × 88D mm (7/8"H × 6 5/8"W × 3 1/2"D)

Weight:
BN-10: Approximately 270 g (9.5 oz) including batteries
BN-20: Approximately 275 g (9.7 oz) including batteries

2. GENERAL GUIDE
2-1. Appearances and Display Indicators





■ Display Indicators

The following shows the names of the various indicators that appear on the display and explains what they mean.

▲:	Data runs off the top of the screen. Scroll displayed data by pressing , ▲, ▼, ▲▲ and ▼▼.
SHIFT:	Keyboard is shifted between upper-case and lower-case input. The punctuation marked above the keys in blue can also be input while the keyboard is shifted.
CAPS:	Keyboard is shift-locked so all text input is upper-case. All text input is lower-case when this indicator is not on the display.
ACC:	Indicates the **ACC** key was pressed. While this indicator is on the display, pressing **Z**, **X**, **C**, **V**, or **B** inputs the accent marked above the key.
COMMAND:	Indicates the **COMMAND** key was pressed, so the next character will be interpreted as a command.
SEARCH:	Indicates that the displayed data is the result of a search operation.
:	Low battery warning
:	Indicates you are currently in the secret memory area.
▼:	Data runs off the bottom of the screen. Scroll displayed data by pressing, ▲, ▼, ▲▲ and ▼▼.

■ Fields and Items

In the sections that cover the personal data storage functions of the BN Unit, you will come across the terms *field* and *item*.
Generally, a *field* is an area on the screen where you actually input the text, numbers, dates, and times you want to store. Some fields, however, provide you with a set of fixed options from which you can choose one.
An *item* (which is actually short for *data item*) is a set of specific fields that forms the basic unit for the storage of the data you input. In the CONTACTS Mode, for example, you input data into NAME, ADDRESS, and PHONE (H) fields. The complete set of data for each person makes up an item.

2-2. Modes and Cursor Keys etc.

In order to use the powerful features and functions of the BN Unit, you must first enter one of the following modes.

- SCHEDULER
- CONTACTS
- MEMO
- EXPENSE MANAGER
- SPREADSHEET
- CLOCK
- MAIL/FAX*

You can enter a mode by pressing its mode key, or by using the Mode Menu.

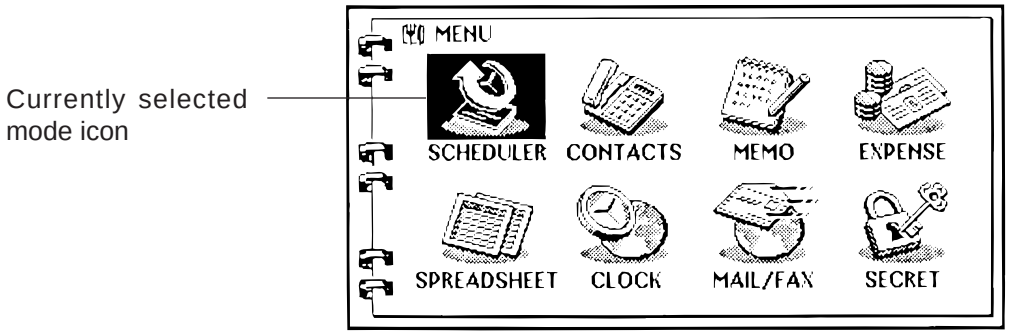
* An optional modem is required to perform the operations in the MAIL/FAX Mode. If a modem is not connected to the BN Unit, it will not enter the MAIL/FAX Mode when you press the **MAIL/FAX** key or when you select **MAIL/FAX** from the Mode Menu. See the manual that comes with the modem for operating procedures and other details.

To enter a mode by pressing a mode key

Press one of the mode keys located under the BN Unit's display to enter the corresponding mode.

To enter a mode using the Mode Menu

1. Press the **MENU** key to display the Mode Menu.



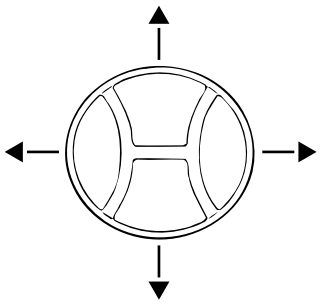
2. Use the ▲, ▼, ◀, and ▶ cursor keys to select the icon you want.
3. Press **OK** to enter the mode whose icon is selected.

Important!

- All the examples shown in this User's Guide use the mode keys to enter modes.

■ Using the Cursor Keys

Use the large round cursor key located in the upper right corner of the BN Unit's keyboard whenever you have to perform any operation that requires movement up, down, left, or right.
In addition to actually moving the input cursor, the cursor key is also used to select menu bar menus and the commands inside of a menu.
In the User's Guide, we will use black arrows to indicate which part of the cursor key you should press to move the cursor in a given direction, even though the cursor key itself is not marked with such arrows.



■ Screen Scrolling

Appearance of the ▲ or ▼ indicator on the left side of the display indicates that data runs off the top or bottom. The following describes how to scroll data.

- Use the ▲ and ▼ cursor keys to scroll line-by-line.
- Use the ▲▲ and ▼▼ keys to scroll a page, day, or week at a time.
- Note that with most screens, not all of the contents scroll. Only the portion of the screen that has multiple lines scrolls (such as the DESCRIPTION field of a SCHEDULER item), while other parts (such as TIME and DATA fields) remain unchaged.

■ Using the Menu Bar

The menu bar provides you with a selection of pull-down menus containing commands that are very similar to those found in many desktop computer applications.
The availability of the menu bar, the type of pull-down menus it contains, and the contents of the pull-down menus depend on the mode you are in and the type of operation you are currently performing. See the Appendix at the back of the User's Guide for a full list of commands that appear in each menu.

■ Make backup copies of important data!

Your BN Unit employs flash memory, which makes it possible to store large volumes of data and to recall data quickly and easily. Data is retained when power is turned off and even when batteries go dead, but it can be corrupted or lost entirely due to operational mistakes or malfunction. Data contents can also be corrupted or lost due to strong electrostatic charge, strong impact, or extremes in temperature and humidity. All of this means that you should always keep back-up copies of important data by transferring it to a personal computer or by writing it down somewhere.

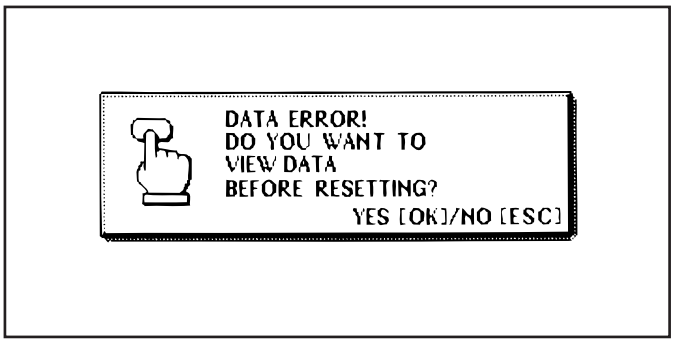
■ Important Precautions

Note the following important precautions whenever using your BN Unit.

- Never expose the BN Unit to fire.
- Avoid temperature extremes. Do not locate the BN Unit in direct sunlight, near a window, near a heater, etc.
- In very low temperatures display response may slow down or fail entirely. This condition is temporary and operation should resume under normal temperatures.
- Avoid areas subject to excessive moisture, dirt, and dust.
- Avoid dropping the BN Unit and otherwise subjecting it to strong impact.
- Never bend or twist the BN Unit.
- Never try to take the BN Unit apart.
- Do not use a pen, pencil, or other sharp object to press keys.
- To clean the exterior of the BN Unit, wipe it with a soft cloth dampened in a weak solution of a mild neutral detergent and water. Be sure to wring out any excess moisture from the cloth before wiping off the BN Unit. Never use benzene, thinner, or any other volatile agent to clean the unit. Doing so can remove the figures printed on the case or otherwise damage the case finish.
- The contents of this manual are subject to change without notice.
- CASIO COMPUTER CO., LTD. assumes no responsibility for any loss or claims by third parties that may arise from the use of this product.

■ Data Errors

The BN Unit performs a self-check routine whenever you turn it on. The message showm below appears if the BN Unit detects a problem with data stored in its memory.



Once data is lost due to a data error it cannot be recovered. Data errors are generally caused by one of the following problems.

- Interruption of battery power
- Severe electrostatic charge, strong impact, changes in temperature, or changes in humidity
- Hardware problems

When the above message appears, you can do one of the following:

- Reset after viewing data stored in memory
  SPREADSHEET Mode data cannot be recalled after a data error. Also note that in the case of a severe data error, you may not be able to view other mode data stored in memory.
- Reset immediately

Continued problems after performing the RESET operation can indicate a serious hardware problem.

To reset after viewing data

1. After the **DATA ERROR** message appears, press **OK** (Yes).
2. In response to the message that appers (**DATA ERROR! CONSULT YOUR USER'S GUIDE FOR CORRECT PROCEDURE.**), press **OK**.

• This enters the CLOCK Mode.

3. Now you can enter other modes to recall data and make handwritten copies if you want.
4. After recalling tha data you want, perform the RESET operation under "To reset the BN Unit" on page 16.

To reset immediately

1. After the **DATA ERROR** message appears, press **ESC** (No).
2. Continue from step 3 under "To reset the BN Unit" on page 16.

■ Basic Settings

Use the following procedures to configure the hardware features of the BN Unit.

To set the on-screen message language

1. Press **MENU BAR** to display the menu bar.
2. Use ▶ to highlight **SYSTEM**, and then press ▼.
3. Use ▼ to highlight **LANGUAGE**, and then press **OK**.
4. In the dialog box that appears, use ▼ and ▲ to select the language you want to use.
5. Press **OK** to register your setting and close the dialog box.

• Pressing **ESC** in the above step closes the dialog box without changing anything.

To turn the key input tone on and off

1. Press **MENU BAR** to display the menu bar.
2. Use ▶ to highlight **SYSTEM**, and then press ▼.
3. Use ▼ to highlight **SOUND**, and then press **OK**.
4. In the dialog box that appears, use ▼ to select **KEY TONE**.

• The selected setting is the one whose on or off setting appears as ◉.

5. Use ◀ and ▶ to turn the key input tone on and off.
6. Press **OK** to register your setting and close the dialog box.

• Pressing **ESC** in the above step closes the dialog box without changing anything.
• Turning on the key input tone causes the BN Unit to beep any time one of its keyboard keys is pressed.

To adjust display contrast

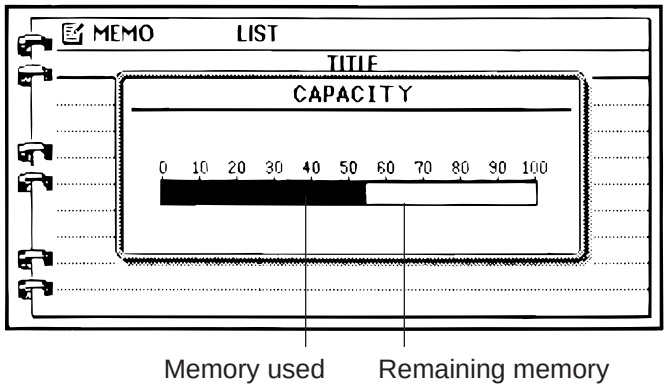
1. Press **MENU BAR** to display the menu bar.
2. Use ▶ to highlight **SYSTEM**, and then press ▼.
3. Use ▼ to highlight **CONTRAST**, and then press **OK**.
4. In the dialog box that appears, press ◀ to make the screen lighter, and ▶ to make it darker.
5. After you are finished making the setting, press **OK** or **ESC** to close the dialog box.

■ Memory Status

You can use the following procedure at any time to check the current status of BN Unit memory.

To check memory status

1. Press **MENU BAR** to display the menu bar.
2. Use ▶ to highlight **SYSTEM**, and then press ▼.
3. Use ▼ to highlight **CAPACITY**, and then press **OK**.



4. Press **ESC** to close the dialog box.

■ Memory Management

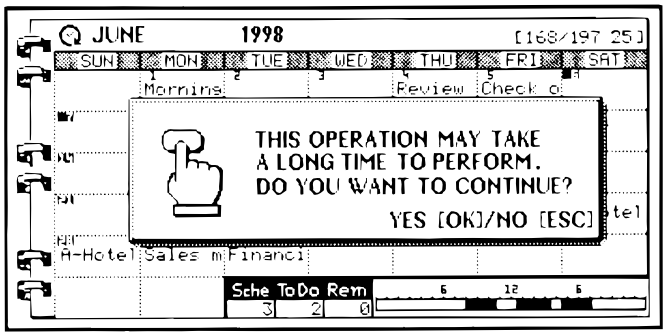
The memory of your BN Unit is designed to make your nomal data input and recall operations as quick and efficient as possible. After repeated storage and deletion of data, however, you may find that you are unable to store new data, even after you have deleted some data from memory. When this happens, you need to perform the following “memory management” procedure, which cleans up and rearranges unused memory to make it available for storage of more data.

Note

- When you need to perform memory management depends entirely how often you delete data from memory and store new data. The more you delete and store, the sooner you will need to perform the memory management procedure.

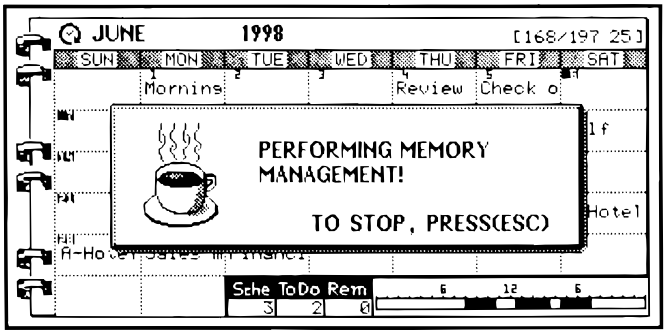
To perform memory management

1. Execute the **SYSTEM** menu’s **MEMORY MANAGEMENT** command.


JUNE 1998
SUN MON TUE WED THU FRI SAT
THIS OPERATION MAY TAKE
A LONG TIME TO PERFORM.
DO YOU WANT TO CONTINUE?
YES [OK]/NO [ESC]
Sche ToDo Rem

2. In the dialog box that appears, press **OK** to start memory management or **ESC** to close the dialog box without doing anything.

- The following dialog box appears after you press **OK** to start memory management.



- You can press **ESC** at any time to stop the memory management procedure.

■ Storage Capacity

The 2-Mbyte memory capacity of the BN-20 (1-Mbyte for the BN-10) includes a 1,499,136-byte user area (687,104-byte for the BN-10). The following shows examples of what this means for the storage of data in each mode.

SCHEDULER

Approximately 23,424 items (10,736 for the BN-10) with 20-character description

Approximately 11,712 items (5,368 for the BN-10) with 50-character descriprion

CONTACTS

Approximately 23,424 items (10,736 for the BN-10), under the following conditions.

8-character name
10-character home phone number
10-character home fax number
20-character home address

Approximately 7,808 items (3,578 for the BN-10), under the following conditions.

8-character name
10-character business phone number
10-character business fax number
40-character business address
20-character employer name
20-character department
20-character position

MEMO

Approximately 1,377 items (631 for the BN-10), 1,024-character memos.

EXPENSE MANAGER

Approximately 11,711 items (5,367 for the BN-10), under the following conditions.

One 5-character account name
10-character payee name per transaction
Expense type set

2-3. Backlight Operation (BN-20 only)

■ About the EL backlight (BN-20 only)

- The BN-20 is equipped with an EL backlight that allows easy viewing of display contents in a theater, or anywhere else where lighting is dim.
- Note, however, that frequent or extended use of the EL backlight shortens battery life.

The following shows how backlight use affects battery life under controlled test conditions*.

Backlight Operation	Battery Life
3 minutes per hour	Approximately 65 hours
15 minutes per hour	Approximately 35 hours

*** Test Conditions**

- "Battery Life" is the number of hours before battery failure when the unit is left on with 5 minutes of a processing operation and 55 minutes of continuous display only (no processing operation) per hour in the CONTACTS Mode, plus the backlight operation described below. The above values assume ambient temperature of 20°C, starting with a fresh set of new batteries.
- "Backlight Operation" is the number of minutes backlight is turned on per hour during the display only (no processing operation) period.
- Be sure to use alkaline batteries. Manganese batteries provide very short battery life.

Important!

- Note that pressing **SHIFT** and then **LIGHT** causes the backlight to light and stay lit as long as you continue to operate the BN Unit, or until you press **LIGHT** again to turn it off manually.
  Leaving the backlight on for long periods greatly reduces battery life!

■ Backlight Operation (BN-20 only)

The electro-luminescent backlight of the BN-20 Unit helps to keep your on-screen data bright and easy to read at all times. There are two different operations you can use to turn on the backlight. One turns the backlight on for about 15 seconds, while the other procedure leaves the backlight on as long as you keep operating the keyboard.
Leaving the backlight on for long periods greatly reduces battery life!

To turn on the backlight for 15 seconds
Press the **LIGHT** key to turn on the backlight. The backlight will turn off automatically after about 15 seconds.
Pressing **LIGHT** while the backlight is lit turns it off.

To leave the backlight on as long as you input data
Press **SHIFT** and then **LIGHT** to turn on the backlight. In this case the backlight will remain on as long as you continue to press keys. It turns off automatically if you do not perform any key operation for about 15 seconds.

Notes

- The backlight will turn off automatically and not turn on when the **LIGHT** key is pressed while data communication operation is in progress.
- The backlight may also suddenly turn off and fail to turn back on whenever battery power is low.

2-4. Power Supply

Your BN Unit can be powered by two AA-size alkaline batteries (LR6(AM3)) or the following optional AC adaptor.

Optional AC Adaptor: AD-A70140

AD-A70140D-OP: for U.S.A. and Canada (AC 100 ~ 120 V)
AD-A70140G-OP: for Europe except U.K. (AC 200 ~ 240 V)
AD-A70140A-OP: for Australia (AC 200 ~ 240 V)

Impotant!

- Normally the flash memory of the BN Unit retains its data when power is turned off and even when batteries go dead. Misoperation or other problems, however, can cause data to become corrupted or lost. Always keep separate copies of important data.

■ Low Battery Warning

The message **BATTERIES ARE GETTING WEAK! REPLACE THEM AS INSTRUCTED IN THE USER'S GUIDE.** appears whenever battery power drops below a certain level. Replace the batteries immediately after this message appears.

Important!

- If you continue using the BN Unit after the low battery warning message appears, power may suddenly turn off or the contrast adjustment screen may suddenly appear. Should this happen, replace batteries immediately.
- Be sure to use alkaline batteries. Manganese batteries provide very short battery life.

■ Initial Screen

Turning on power displays the last screen that was on the display when you last turned off power.

■ Auto Power Off

The Auto Power Off function automatically turns off power whenever you do not perform any key operation for about 6 minutes. Use the procedure described under "To turn power on and off" described in the next page to turn power back on.

■ AC Adaptor

Caution!

- Use the AC adaptor only with a power outlet whose voltage matches that marked on the adaptor. Do not plug the adaptor into an extension shared by other appliances. Doing so creates the danger of fire and electrical shock.
- Use only the AC adaptor model specified for the BN Unit in this manual. Use of another adaptor creates the danger of fire and electrical shock.
- Do not allow the electrical cord of the AC adaptor to become damaged or cracked. Never modify, sharply bend, twist, or pull on the cord. Do not place heavy objects on the cord or expose it to heat. Use of a damaged electrical cord creates the danger of fire and electrical shock.
- Use of a damaged electrical cord creates the danger of fire and electrical shock.
- Never touch the AC adaptor while your hands are wet. Doing so creates the danger of electrical shock.
- Never pull on the power cord when unplugging the AC adaptor. Doing so can damage the cord and create the danger of fire and electrical shock. Always hold onto the AC adaptor unit when unplugging it from the wall outlet.
- Unplug the AC adaptor from the wall outlet whenever you plan to leave the BN Unit unattended for very long periods.
- After using the BN Unit, turn off power and unplug the AC adaptor from the wall outlet.

Important!

- Use only the following optionally available AC adaptor model with this product:

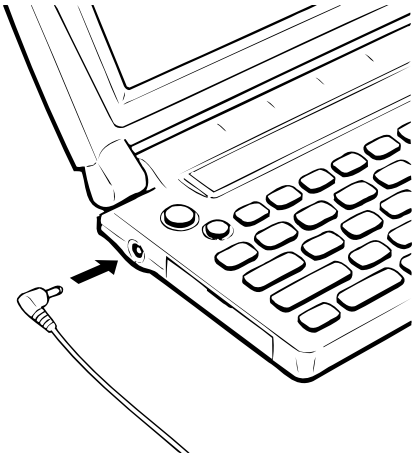
  AD-A70140.
- Use of a AC adaptor model other than that specified above can result in serious damage to the AC adaptor or the BN Unit, or other serious problems.
- Always turn off the BN Unit before connecting the AC adaptor.
- The AC adaptor may become warm to the touch after very long term use. This is normal and does not indicate malfunction.

To connect the AC adaptor

Important!

- Be sure to have batteries loaded in the BN Unit, even when using the AC adaptor unit for power. The BN Unit is designed to disable operation if an attempt is made to operate it under AC adaptor power, while batteries are not loaded or battery power is low. This is done in order to protect against corruption of memory contents caused by a sudden drop in power when the AC adaptor is unplugged from the BN Unit.
- Always unplug the AC adaptor from the BN Unit before replacing batteries.

1. Connect the AC adaptor into the jack on the left side of the BN Unit.



2. Plug the AC adaptor into a standard household AC outlet.

■ Turning Power On and Off

After you load batteries, use the following procedure to turn power on and off.

To turn power on and off

1. Press the power on key turn to power on.
- If you are using a BN-10 Unit, press **ON**.
- If you are using a BN-20 Unit, press **ON/OFF**.

2. To turn power off, press the power off key.
- If you are using a BN-10 Unit, press **OFF**.
- If you are using a BN-20 Unit, press **ON/OFF**.

3. RESET OPERATION and BATTERY REPLACEMENT

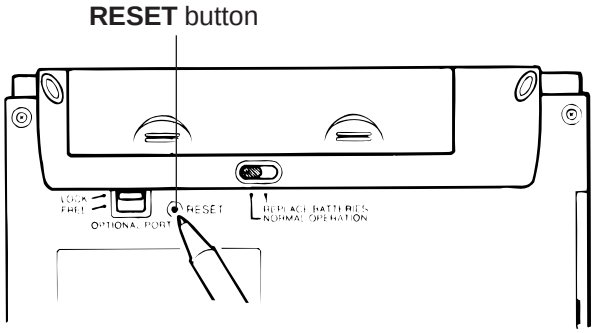
3-1. Reset Operation

Warning!

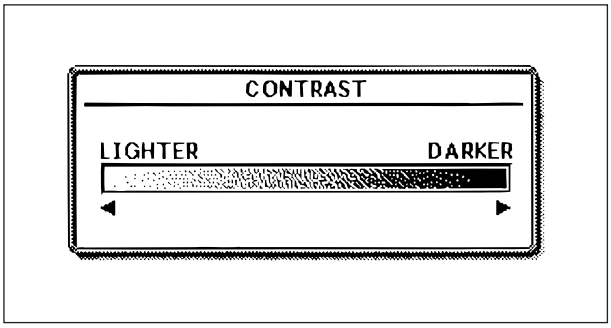
The following procedure erases all data stored in the memory of the BN Unit. Perform this operation only when you want to delete all data and initialize the settings of the BN Unit.
Remember-you should always keep copies of important data by writing it down, or by transferring it to a personal computer.

To reset the BN Unit

1. Press the power on key (BN-10: **ON**, BN-20: **ON/OFF**) to turn on power.
2. Use a thin, pointed object to press the **RESET** button on the back of the BN Unit.

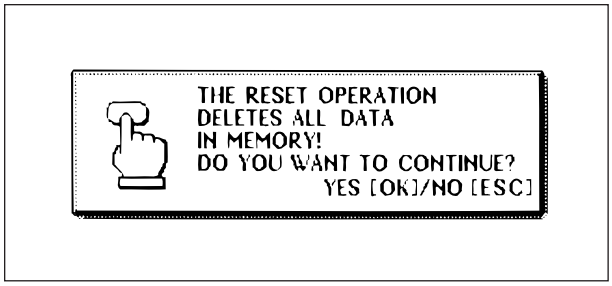


- This causes the contrast adjustment screen to appear.



- If the contrast adjustment screen does not appear when you press the **RESET** button, slide the battery switch to the REPLACE BATTERIES position and remove the battery compartment cover. Use a thin, pointed object to press the **P** button and then replace the battery compartment cover. Slide the battery switch back to the NORMAL OPERATION position and then press the **RESET** button.

3. Use ◀ and ▶ to adjust the contrast of the screen, if necessary, and then press **OK**.



4. In response to the message that appears, press **OK** to reset the BN Unit and clear all memory contents, or **ESC** to abort the reset procedure without doing anything.
5. If you pressed **OK** in the above step, a second confirmation message appears. Press **OK** to reset the BN Unit and clear all memory contents, or **ESC** to abort the reset procedure without doing anything.

- Pressing **OK** in the above step starts the actual reset procedure.

6. After the reset procedure is complete, use the ▲ and ▼ cursor keys to highlight the display message language you want to use.
7. Press **OK** to complete the procedure. This enters the CLOCK Mode.
8. Check the Home Time setting and make changes if necessary (page 19).

- Following are the initial settings of the BN Unit after you perform the RESET operation.

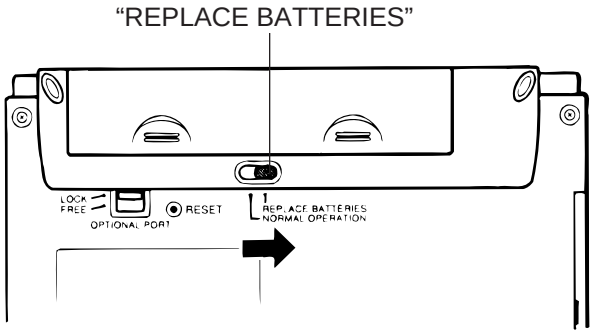
Home Time:	London JAN/1/1998 AM 12:00 12-hour format
World Time:	New York
Daily Alarm:	PM 12:00
Sound:	Daily Alarm off, all others on
Messages:	English
Character input:	CAPS

3-2. Battery Replacement

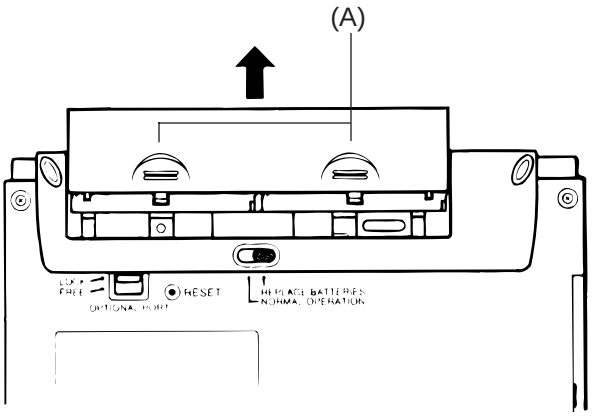
Important!

- Always unplug the AC adaptor from the BN Unit before replacing batteries.
- Always make sure the battery switch is the NORMAL OPERATION at all times, except when replacing batteries.

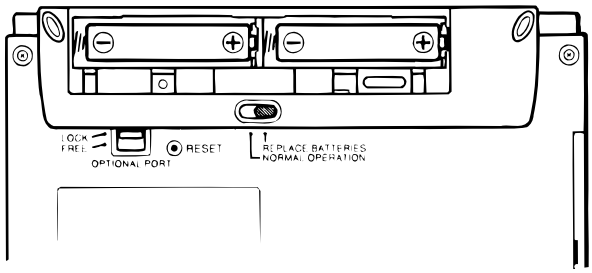
1. Turn off BN Unit power.
2. Slide the battery switch on the back of the BN Unit to the REPLACE BATTERIES position.



3. While pressing at the points marked (A) in the illustration, slide the battery compartment cover in the direction indicated by the arrow to remove it.

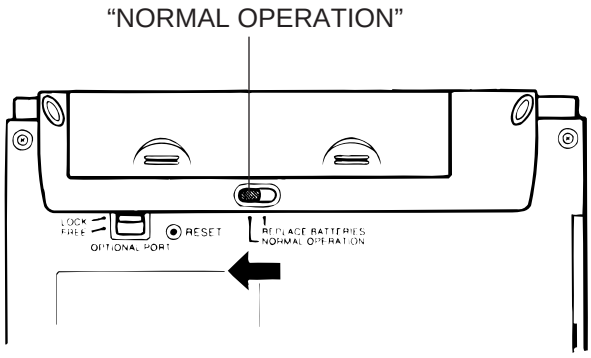


4. Remove both of the old batteries.
5. Load two new batteries, making sure that their positive (+) and negative (–) ends are facing in the proper directions.



6. Taking care not to damage its tabs, replace the battery compartment cover back onto the BN Unit.

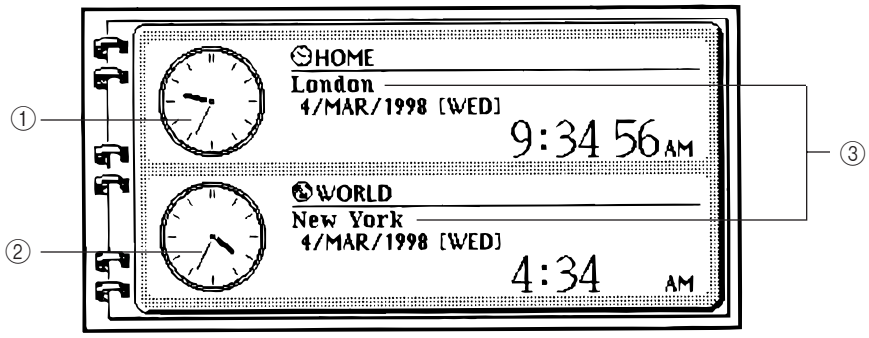
7. Slide the battery switch back to the NORMAL OPERATION position.



8. Press the power on key (BN-10: **ON**, BN-20: **ON/OFF**) to turn on power.
   - This causes the contrast adjustment screen to appear.
9. Use the ◀ and ▶ cursor keys to adjust the contrast of the display, and then press **OK**.
   - If nothing appears on the display after you press the power on key, remove the batteries and then reload them into the BN Unit, making sure you follow proper procedures.
   - If this does not solve the problem, refer to "Troubleshooting" on page 40.
10. In response to the message that appears (**CHECK YOUR HOME TIME SETTING AND CORRECT IT IF NECESSARY!**), press **OK**. This enters the CLOCK Mode.
11. Check the Home Time setting and make changes if necessary as described below.
12. Perform the procedure under "To set the on-screen message language" on page 10 to specify the language you want to use.

■ Entering the CLOCK Mode

Press **CLOCK** to enter the CLOCK Mode. When you do, an initial dual clock screen appears, which shows the current time in your Home Time zone and a World Time zone.



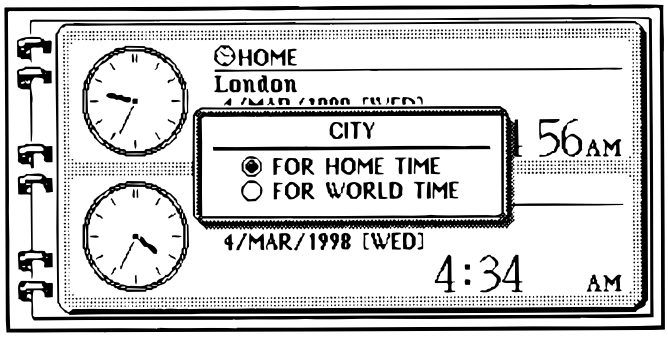
① Home Time clock
② World Time clock
③ City name

■ Selecting a Time Zone

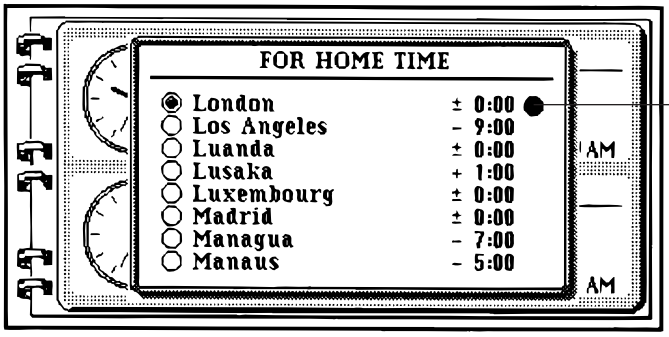
You can select a *Home Time* zone for the place where you normally work and live, and a second *World Time* zone for simultaneous time keeping in two locations on the globe.

To select a zone

1. In the CLOCK Mode, execute the **EDIT** menu's **CITY** command.



2. Use ▲ or ▼ to move the highlighting to **FOR HOME TIME** or **FOR WORLD TIME**, and then press **OK**.



- The DST indicator shows which cities for which daylight saving time is turned on. See page 21 for details on turning daylight saving time on and off.

3. Use ▲ and ▼ to select the name of the city you want to use as your Home Time city or World Time City.

- Press ▲▲ and ▼▼ to scroll the list of city names page by page.
- To jump to a city name, input the letter that the name begins with.
- See the Appendix at the back of the User's Guide for a complete list of available city names.

4. Press **OK** to register your selection.

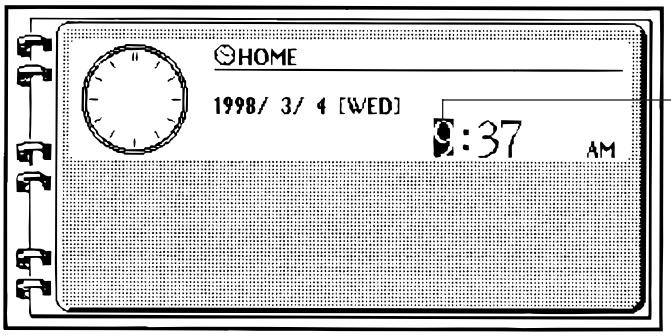
■ Setting the Home Time

Use the following procedure to set the time and date for your Home Time. The times for all other time zones are calculated based on your Home Time setting.

- You can set the date within the range of January 1, 1901 through December 31, 2099.

To set your Home Time and date

1. In the CLOCK Mode, execute the **EDIT** menu's **HOME TIME SETTING** command.



2. Use ◀ and ▶ to move the selection (flashing) between the hour, minutes, year, month, and day.
3. While a setting is flashing, input the number you want to change it to.
   - If you are using the 12-hour time format, be sure to press the keyboard's **A** key to indicate "am" or **P** key for "pm".
4. After you are finished making the settings you want, press **OK** to store them.
   - Pressing **OK** resets the seconds count to "00".

■ Other CLOCK Mode Settings

The following procedures describe how to make other settings that help you configure the CLOCK Mode suit your needs.

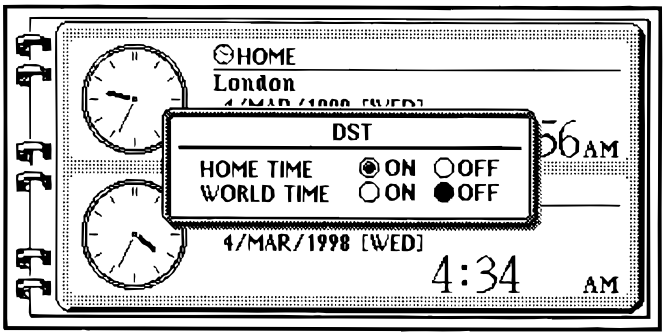
To switch between 12-hour and 24-hour time formats

In the CLOCK Mode, execute the **EDIT** menu's **12/24-FORMAT** command.

- Executing the above command toggles the time format between 12-hour and 24-hour.

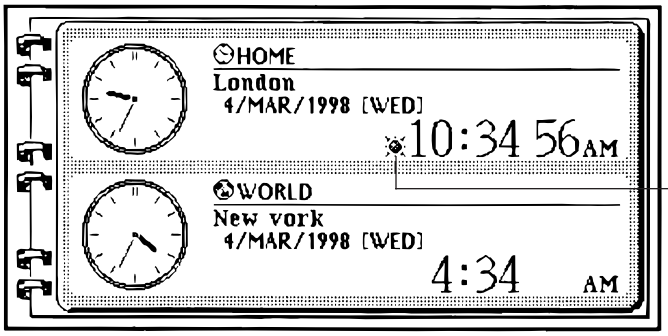
To switch between standard time and daylight saving time

1. In the CLOCK Mode, execute the **EDIT** menu's **DST** command.



   - Note that you can make separate settings for your Home Time and World Time.
2. Use ◀ and ▶ to turn daylight saving time for your Home Time on and off.
3. Press ▼ to select the World Time setting.
4. Use ◀ and ▶ to turn daylight saving time for the World Time on and off.

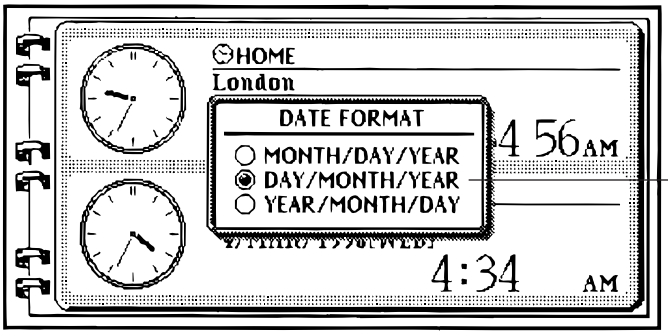
5. After making the settings you want, press **OK** to register them.



- Turning on daylight saving time causes the standard time to be advanced by one hour.
- Note that daylight saving time cannot be turned on for GMT.

To select a data format

1. In the CLOCK Mode, execute the **EDIT** menu's **DATE FORMAT** command.



2. Use ▲ and ▼ to select the date format you want to use.
3. Press **OK** to register your setting.

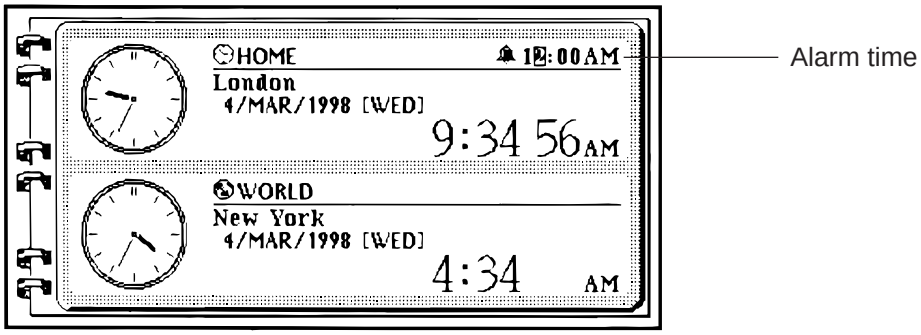
- The date format you select with the above procedure is applied anytime a date appears on the display of the BN Unit.

■ Using the Daily Alarm

You can set an alarm time to cause an alarm to sound whenever that time is reached in your Home Time city.

To set an alarm time

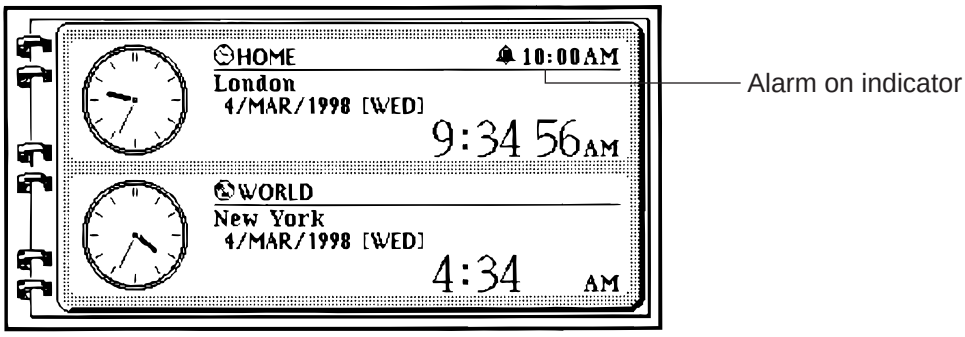
1. In the CLOCK Mode, execute the **EDIT** menu's **ALARM TIME** command.



2. Input the hour and minutes of the alarm time you want to set.

• Use ◀ and ▶ to move the selection (flashing) between the hour and minutes.

3. If you are using the 12-hour time format, be sure to press the keyboard's **A** key to indicate "am" or **P** key for "pm".
4. After you set the alarm time you want, press **OK** to store it.



• The above procedure automatically turns on the Daily Alarm.

• Whenever the alarm time is reached while the Daily Alarm is on, a buzzer sounds for about 20 seconds or until you press any of the BN Unit's keys.

To turn the Daily Alarm on and off

1. Execute the **SYSTEM** menu's **SOUND** command.
2. In the dialog box that appears, use ▼ to select **DAILY**.

• The selected setting is the one whose on or off setting appears as ◉.

3. Use ◀ and ▶ to turn the alarm on and off.
4. Press **OK** to register your setting and close the dialog box.

• Pressing **ESC** in the above step closes the dialog box without changing anything.

4. DATA COMMUNICATION

4-1. General

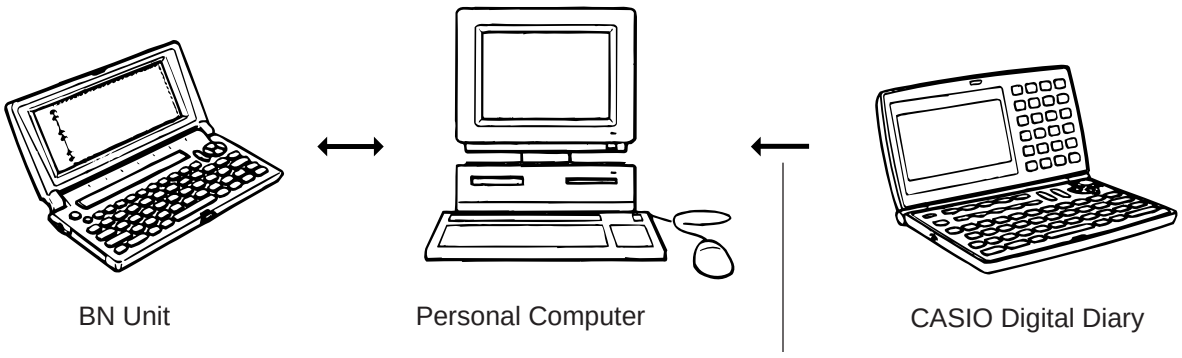
You can exchange data between your BN Unit and a personal computer using PC sync for Windows. This provides the data communication capabilities illustrated below.

- See the manual that comes with PC sync for Windows for details on connecting to a computer and setting up for communication.

■ Exchanging Data with Another BN Unit

BN Unit　　Personal Computer　　BN Unit

■ Importing Data from Another CASIO Digital Diary Model



BN Unit　　Personal Computer　　CASIO Digital Diary

Optionally available cable

- PC sync for Windows cannot be used to send data from your computer to another CASIO Digital Diary model.
- See the manual that comes with PC sync for Windows for a list of supported CASIO Digital Diary models, required PC system configuration and cable requirements.

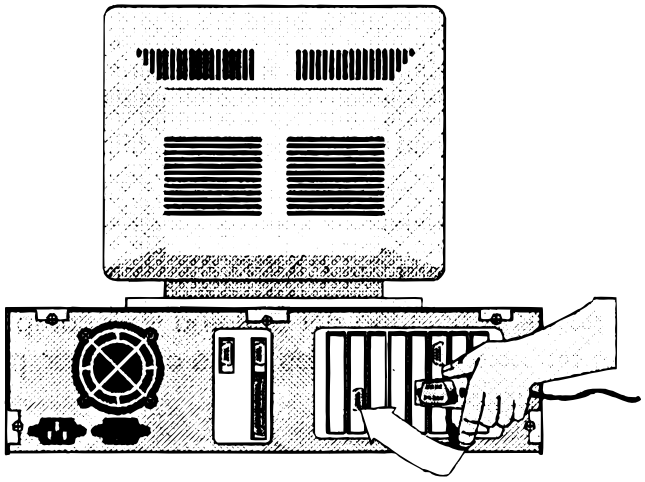
Note

- If an imported spreadsheet has more than 32kb of data, anything over 32kb is automatically deleted.

4-2. Connecting the CASIO BN Unit to PC

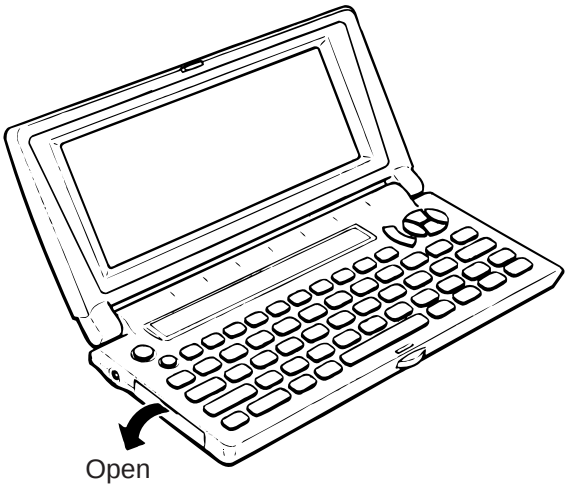
Important!
Be sure to turn off the power of both your BN Unit and computer before connecting them. Failure to do so can result in damage to the BN Unit, your computer, or the Mini Cradle.

1. Plug the connector at the end of the Mini Cradle´s cable into your computer´s serial port (RS-232C).
- The serial port is normally labeled COM1, COM2, COM3, or COM4.
- If the serial port on your computer does not match the Mini Cradle´s connector, you need to purchase an adaptor. See the documentation that comes with your computer for details.

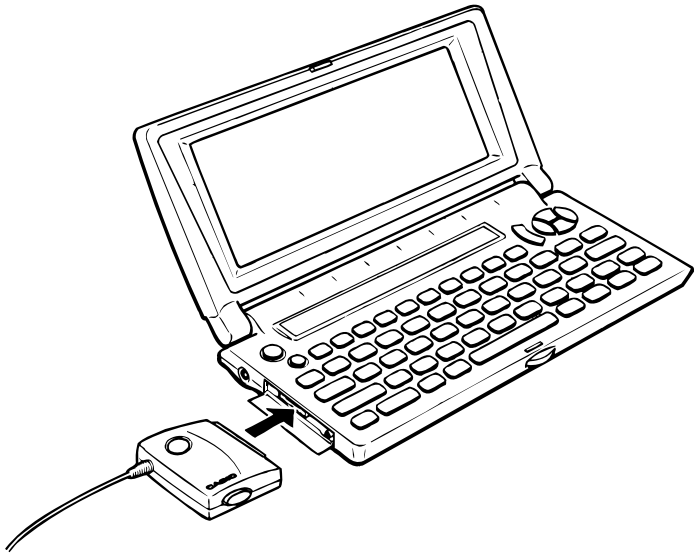


To connect the Mini Cradle to the CASIO BN Unit

1. Make sure that the power of both the BN Unit and your computer is turned off.
2. Open the Mini Cradle port cover on the left side of the BN Unit as shown in the illustration.



3. With the side marked CASIO facing up (so you can see it), plug the Mini Cradle connector straight into the BN Unit port.

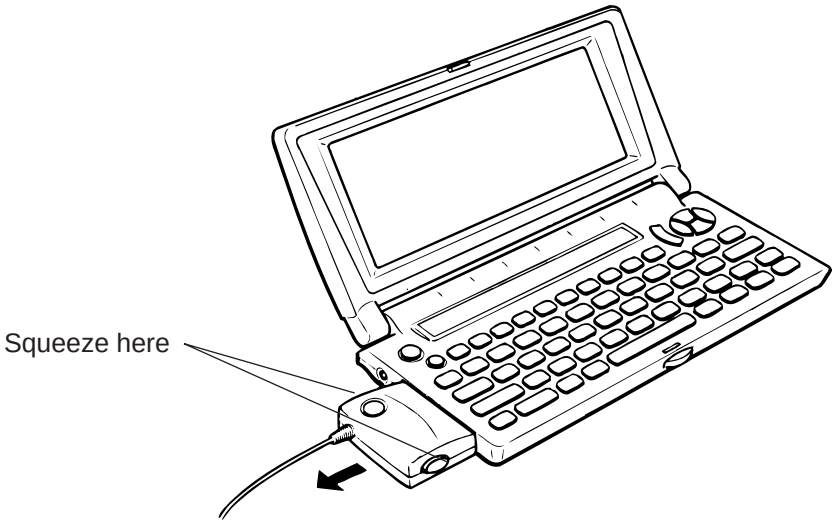


Important!

- Make sure you insert the connector as far as it will go, until you hear it snap securely into place.
- Do not apply undue force! Doing so can damage the Mini Cradle connector or BN Unit port.

To disconnect the Mini Cradle from the CASIO BN Unit

1. Make sure that the power of both the BN Unit and your computer is turned off.
2. While squeezing the buttons on both sides of the connector, pull it straight out from the Mini Cradle port to remove it.



3. Close the BN Unit´s port cover.

4-3. PC sync for Windows (Brief explanation)

If you want to known PC LINK Software for BN-10/20 (**PC sync for Windows**) in detail, refer to the User´s Guide for this software.
This software is similar to FA-127/128 regarding to operation, but have some features which don´t exist with FA-127/128.
The following PC, OS for PC and Display for PC are recommended.

PC:	IBM PC or compatible one
OS for PC:	Windows 3.1 or Windows 95
Display for PC:	VGA or one which have more pixels than VGA

And the available information and remarks for repair will be described below.

■ Features

1. START button on the mini cradle

① To start perform all data transfer (ordinary transfer, data synchronization, complete backup and retrieval of data) between BN Units and PC, the round **START** button on the mini cradle always must be pressed finally.

② Pressing **START** button at the time of turning off BN Unit, BN Unit is forced to turn on. At this time, the following display appears.

"**DATA COMMUNICATION IN PROGRESS! TO STOP, PRESS [ESC]**"

Pressing **ESC** button, the following display appears. "**STOPPED!**"
Pressing **ESC** button once more, the **MENU** mode display will appear.

2. High speed data transfer

The default transfer speed is 38400 b.p.s..
The data transfer speed can be set to 1200~38400 b.p.s. (1200, 2400, 4800, 9600, 14400, 19200, 28800 and 38400 b.p.s.) because BN Units have more memory capacity than another CASIO Digital Diary. The high speed data transfer causes often to miss the data transfer. Therefore, the high speed LINE DRIVER/RECEIVER circuit is set to Main PCB assembly.

3. Data synchronization

The BN Unit can be synchronized with a PC sync file, i.e. the PC file and the BN Units can be brought up to an identical data state. New records existing on both units in an identical state will be filtered automatically, to avoid creating doubles. PC LINK software FA-128 for SF-5590SY/5790SY/5990SY have this operation also. But "**Ignore**" setup with FA-128 is deleted with PC sync for Windows for BN Units.

4. Complete backup and retrieval of data

Performing the following procedure described below, all the data transfer included secret area data can be performed without knowing and entering the password.
Threfore, the data transfer from a Unit to another Unit using SB-60/SB-62/SB-63 cable as the other CASIO Digital Diaries doesn´t exist with BN units.

● PROCEDURE

The menu items ("**Casio**" → "**Backup**" → "**Send**" or "**Receive**") enable you to transfer all the data of your BN Unit fast and efficiency to your PC, e.g. before changing batteries, and - if necessary -back to your BN Unit.
While transferring some data between the BN Unit and PC, the following display always appears.
"**DATA COMMUNICATION IN PROGRESS! TO STOP PRESS [ESC]**"

<Data transfer from BN Unit to PC>

① To back up the data, choose "**Casio**", then "**Backup**", and then "**Receive**" with PC.

② Next, press **START** button on the mini cradle. All data is now transferred to PC.
* Time for this transfer (BN-10: about 10 minutes/ BN-20: about 20 minutes) is very long compared with the other transfer even if the transfer is performed with 38400 b.p.s..

③ Give the backup file a file name after the transfer.

<Data transfer from PC to BN Unit>

① To retrieve the data, choose "**Casio**", then "**Backup**", and then "**Send**" with PC.

② Then select the relevant back-up file.

③ Next, press **START** button on the mini cradle. All data is now transferred to BN Unit.
* Time for this transfer (BN-10: about 10 minutes/BN-20: about 20 minutes) is very long compared with the other transfer even if the transfer is performed with 38400 b.p.s..

④ After data transfer, the **MENU** mode display will appear with BN Unit.

Note

- Backup files always have the extension *.**bak** and cannot be edited, i.e. you cannot open them choosing "**File**", then "**Open**".

■ Remarks

1. Select *the default PORT (COM1 PORT) ordinarily. Otherwise, the data transfer will not be performed. Select another PORT if the data transfer is not performed with COM1 PORT.
* The default PORT will be appeared by the following procedure.
Casio → Transmission Setup... → Serial

2. If PC LINK software FA-127/(128) and PC sync for Windows were installed in your PC and some files (the extension ".**twf**") made by FA-127/128 exist, these files will be opened with PC sync for Window at the time of opening one of these files with mouse directly.
Be sure to select "**File**" and then "**Open** " after opening the software FA-127/(128).
To discriminate and control the files having the same extension ".**twf**", three kinds of holders should be made in your PC.

3. To print data in a file after exporting data in this file having the extension ".**twf**", you had better choose the **ANSI [Plain ANSI text]** at this time. These data in this file will be saved with the extention ".**text**".
Printing many data in the file having the other extension (for example, ".**csv**"), these many printed data are very difficult to see.

5. OPERATION CHECK

REMARK: Before entering this check, the reset operation is necessary.
Therefore, performing this check, all data saved in the unit will be deleted.
Before performing this check, transfer all data saved in BN Unit to a personal computer using PC LINK software package (floppy disk- 2 sheets, a mini cradle and a instruction manual for this software- PC sync for Windows).
PC LINK software package is attached to BN Unit and packed together.
Refer to 4. DATA COMMUNICATION of this Service Manual and the instruction manual described above regarding to how to transfer between BN Unit and PC.
The data transfer with "Complete backup and retrieval of data" will be recommended.

5-1. To enter the operation check mode

Refer to **3. RESET OPERATION and BATTERY REPLACEMENT** of this manual.

① Slide the battery switch on the back of BN Unit to the REPLACE BATTERIES position.

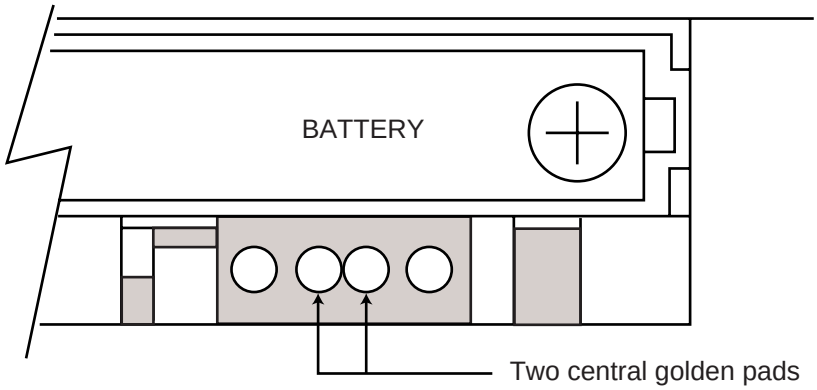
② Remove the battery cover.

③ Slide the battery switch on the back of BN Unit to the NORMAL OPERATION position.

④ Turn the power on.

⑤ Pressing the **RESET** button on the back of the BN Unit using a thin, pointed object, the contrast adjustment screen appears.

⑥ Short two central golden pads as shown below.



* You had better use a conductive rubber attached to a handle to short these pads.
Because, shorting these pads using a pointed metal object, these pads may be damaged and difficult to be shorted surely.
The conductive rubber is used as the reset rubber key. You can make a available tool as described above taking advantage of this rubber key, the adhesive and a handle.
Shorting these pads, the following **TEST MENU** display appears.

```
******* TEST MENU *******
1 DISPLAY CHECK
2 MEMORY CHECK
3 FLASH CHECK
4 KEY CHECK
5 OPTION CHECK
6 CRADLE CHECK
7 MODEM CHECK
8 OTHERS CHECK
9 END (RESET)
```

5-2. Operation Check

Three items (**5. OPTION CHECK/ 6. CRADLE CHECK/ 7. MODEM CHECK**) in these nine test items can not be executed for the following reasons.

5. **OPTION CHECK**- This check can not be performed now, because data transfer between BN Units don't exist and the jack (3 pin) on Main PC board for this data transfer don't exist also.
6. **CRADLE CHECK**- The special jigs are necessary to perform this check.
   Check data transfer between BN Unit and PC referring to **4. DATA COMMUNICATION** of this manual.
7. **MODEM CHECK**- The MODEM BW-100 is necessary for this check. But formal MODEM BW-100 don't exist now. After the formal marketed BW-100 appears, the technical information for BW-100 will be supplied.

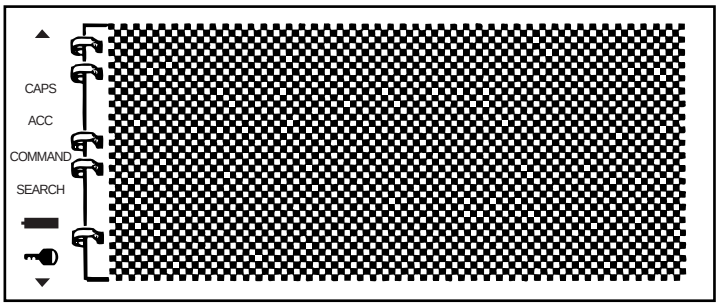
5-2-1. DISPLAY CHECK

① Press **1** button. The following display appears.

```
          ### DISPLAY MENU ###
    1  PATTERN-1
    2  PATTERN-2
.....................
    8  PATTERN-6
    9  PATTERN-7
```

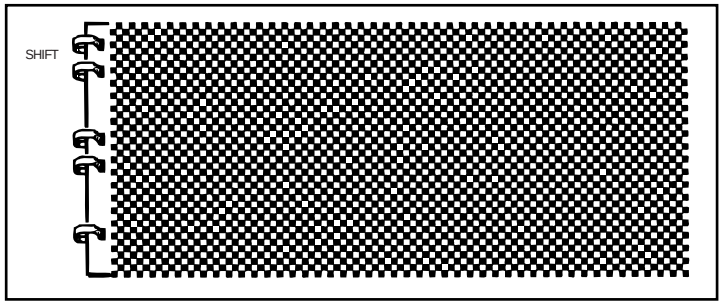
② **PATTERN-1**
Press **1** button. The following display appears.

CHECKER



③ **PATTERN-2**
Press **ESC**, then **2** button. The following display appears.

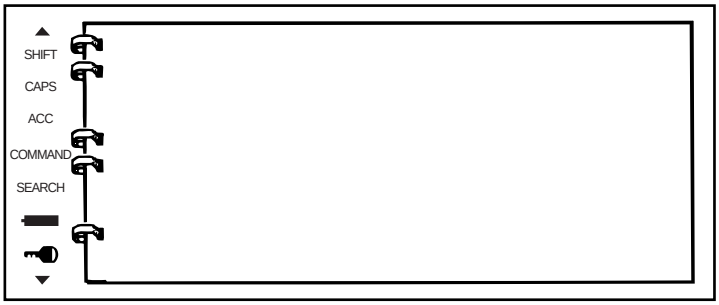
REVERSED CHECKER



④ **PATTERN-3**

Press **ESC**, then **3** button. The following display appears.

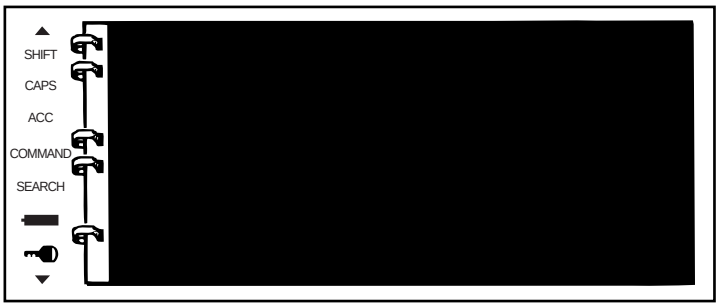
FRAME



⑤ **PATTERN-4**

Press **ESC**, then **4** button. The following display appears.

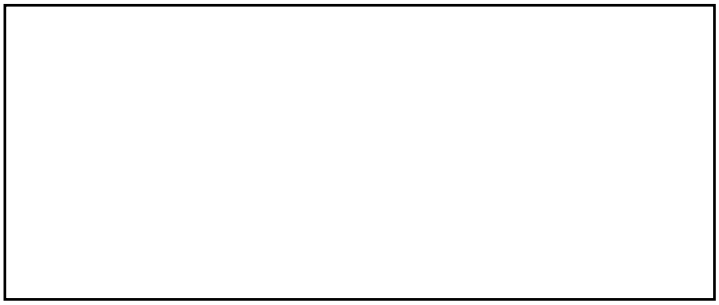
ALL DISPLAY



⑥ **PATTERN-5**

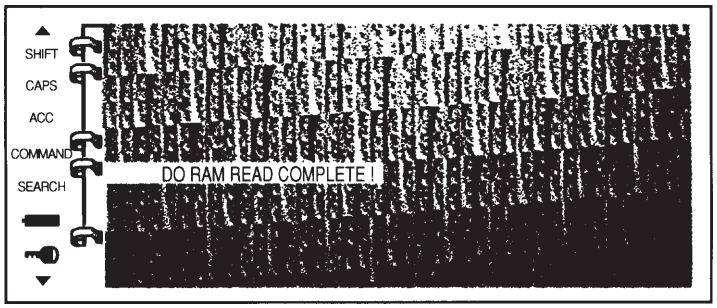
Press **ESC**, then **5** button. The following display appears.

NO DISPLAY



⑦ **DD RAM CHECK**

Press **ESC**, then **6** button. The following display appears.



⑧ **CONTRAST**
Press **ESC**, then **7** button. The following display appears.

According to this display, change the contrast value from 00 to 1F using Cursor keys. Doing so, brightness of display changes from dark to light, and then from light to dim. The contrast is best with default contrast value 10.

<Contrast Check>

Touch [ESC] Hard Icon Them Test END
Touch [<-] Key Then [DRANK]
Touch [->] Key Then [THIN] ([LIGHT])

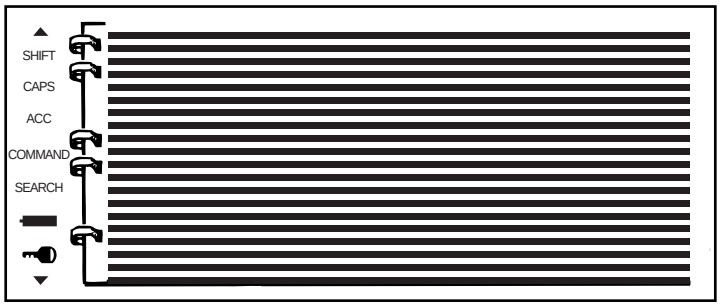
<< DARK <- + -> THIN(LIGHT) >>
Contrast Value : 10

⑨ **PATTERN-6**
Press **ESC**, then **8** button. The following display appears.

STRIPE

⑩ **PATTERN-7**
Press **ESC**, then **9** button. The following display appears.

REVERSED STRIPE



⑪ Press **ESC** button twice. Doing so, **TEST MENU** display appears.

5-2-2. MEMORY CHECK

① Pressing **2** button, the following **MEMORY MENU** appears.

 # # # MEMORY MENU # # #
1 SRAM MEMORY CHECK
2 CHECK SUM
3 BUS CHECK
4 SRAM WRITE CHECK
5 SRAM READ CHECK
6 FLASH CROSS BIT CHECK
7 FLASH CROSS BIT CHECK F

② **SRAM MEMORY CHECK**
Press **1** button, the following display appears.

```
SRAM CHECK
  (128K)=  OK
```

In case of abnormal S-RAM, **NG** display appears.

③ **CHECK SUM**
Press **ESC**, then **2** button. The following display appears.

```
ROM SUM
  (CS8)= XXXX
  (CS7)= XXXX
```

ROM shown to this display indicates LSI301.

④ **BUS CHECK**
Press **ESC**, then **3** button. The following display appears.

```
SRAM CHECK
  (128K)=   OK

ROM SUM
  (CS8)= XXXX
  (CS7)= XXXX

FLASH CHECK
  (CS5)=    1M
XXX5
  (CS4)=    1M                  XXXXXXXX
XXX4                            BANKXX
```

" (CS5)= 1M" indicates that the flash ROM of memory capacity 1M byte is mounted on Main PC board as LSI304. If this ROM is not mounted, "NC" is displayed instead of "1M".
" (CS4)= 1M" indicates that the flash ROM of memory capacity 1M byte is mounted on Main PC board as LSI306. "NC" is displayed in stead of "1M" because this LSI306 is not mounted with BN-10. “XXX44” is not displayed with BN-10 also.
"XXX5(4)"- If "OKF5(4)" is displayed, the flash ROM of LSI304(LSI306) is formatted and have no memories. If "NGF5(4)" is displayed, the flash ROM of LSI304(LSI306) is not formatted and have memories.
If "OKB5(4)" is displayed, the wiring interior the flash ROM of LSI304(LSI306) is normal and steady. If "NGB5(4)" is displayed, the wiring interior the flash ROM of LSI304(LSI306) is abnormal and unsteady.

⑤ **SRAM WRITE CHECK**
Press **ESC**, then **4** button. The following display appears.

```
SRAM  WRITE
END
```

⑥ **SRAM READ CHECK**
Press **ESC**, then **5** button. The following display appears.

```
SRAM CHECK
  (128K)=  OK
```

⑦ **FLASH CROSS BIT CHECK**
Press **ESC**, then **6** button. The following display appears.

```
FLASH CHECK
   (CS5)=   1M
NGF5
   (CS4)=   1M                  XXXXXXXX
NGF4                             BANKXX
```

"(CS4)= NC" is displayed in stead of "(CS4)= 1M" with BN-10.
And "NGF4" is not displayed with BN-10 also.

⑧ **FLASH CROSS BIT CHECK F**
The flash ROM LSI304 (306) is formatted at first, and then the data for this check are written into LSI304 (306). Next, these data are read from LSI304 (306).
Press **ESC**, then **7** button. The following display appears.

```
FLASH CHECK
  (CS5)=    1M
OKF5  OKW5  OKR5
  (CS4)=    1M                 XXXXXXXX
OKF4  OKW4  OKR4                 BANKXX
```

OKW5 (4) indicates that the data for this check could be written into LSI304 (306) without problems.
NGW5 (4) indicates that the data for this check could not be written into LSI304 (306).
OKR5 (4) indicates that these data could be read from LSI304 (306) without problems.
NGR5 (4) indicates that these data could not be read from LSI304 (306).
"(CS4)= NC" is displayed in stead of "(CS)= 1M" with BN-10.
"OKF4 OKW4 OKR4" is not displayed with BN-10 also.

⑨ Press **ESC** button twice. Doing so, **TEST MENU** display appears.

5-2-3. FLASH CHECK

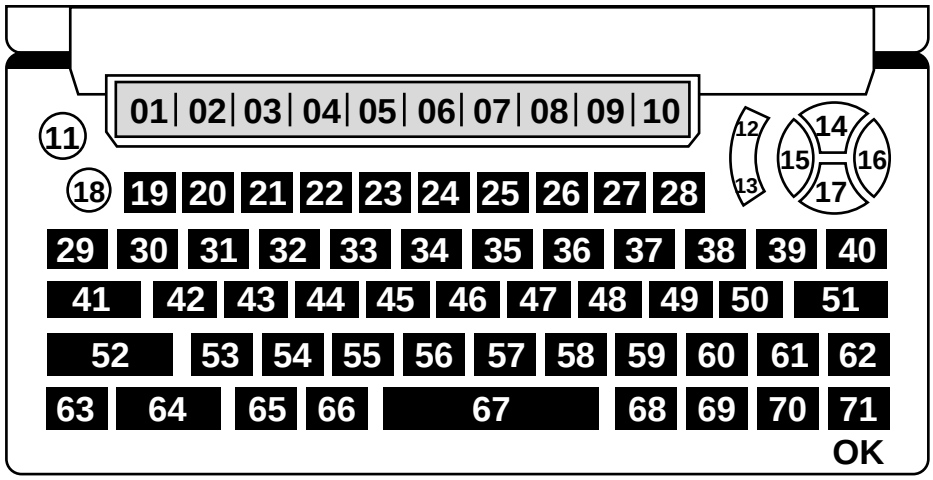
It is unnecessary to perform this check because the operation of flash ROM LSI304 (306) can be checked using **5-5-2. MEMORY CHECK** described above.

5-2-4. KEY CHECK

① Pressing **4** button, the following **KEY MENU** display appears.

```
          # # #  KEY CHECK  # # #
 1  AUTO KEY CHECK
 2  RANDOM KEY CHECK
```

② **AUTO KEY CHECK**
Pressing **1** button, no display appears. Press 01, 02, ..., then 71 button one after another and in order referring to the illustration described below.
Performing this check in wrong order, BEEP sound is emitted for one second.
After pressing a key, its key number is displayed.
If you want to stop this check halfway, press **OK** (71) button. Then **KEY MENU** display described above appears.



③ **RANDOM KEY CHECK**
Pressing **2** button, no display appears. Press keys at random referring to the illustration described above.
After pressing a key, its key number is displayed.
If you want to stop this check halfway, press **OK** (71) button. Then **KEY MENU** display described above appears.

④ Press **OK** (71) button. Then **KEY MENU** display appears. Next, pressing **ESC** button, **TEST MENU** display appears.

5-2-5. OTHER CHECK

① Pressing **8** button, the following **OTHERS MENU** display appears.

```
### OTHERS MENU ###
1 BEEP
2 ALARM1
3 ALARM2
4 CLOCK
5 SW CONDITION
6 CS6 DOWN LOARD
7 NMI CHECK
8 EL ON CHECK
9 EL OFF CHECK
```

Two items (item 8 and item 9) are not displayed with BN-10 because of no EL back light.

② **BEEP**
Pressing **1** button, BEEP sound is emitted once in one second.
Then press **ESC** button to stop ringing.

③ **ALARM1**
Pressing **2** button, BEEP sound is emitted twice in one second.
Then press **ESC** button to stop ringing.

④ **ALARM2**
Pressing **3** button, BEEP sound is emitted three times in one second.
Then press **ESC** button to stop ringing.

⑤ **CLOCK**
Pressing **4** button, the following display appears.

```
0:00 0X
```

Then pressing **OK** button, the following display appears.

```
12:00 0X
```

Then pressing **ESC** button, **OTHERS MENU** display appears.

⑥ **SW CONDITION**
Pressing **5** button, the following display appears.

DETECT MONITOR		
	OPEN	**LOCK**
BTTERY SW		✻
CARDLOCK SW		✻
	ON	**OFF**
LOW BATTERY1		✻
LOW BATTERY2		✻
CRADLE SW		✻

Sliding battery switch and lock switch for MODEM on the back of BN Unit, positions of two upper asterisks shown above change.
Pressing **START** button on the cradle after setting it to BN Unit, position of a lower asterisk shown above changes.
Then pressing **ESC** button, **OTHERS MENU** display appears.

⑦ **CS6 DOWN LOAD**
The special jig with which data can be written to LSI301 and LSI308 passing through the connector for MODEM is necessary to perform. This jig can not be prepared.
Therefore, pressing **6** button, the following display appears.

```
0
CS6 NOTHING
```

Then pressing **ESC** button, **OTHERS MENU** display appears.

⑧ **NMI CHECK**
The term "NMI" means Non Mask-able Interrupt with CPU.
Pressing **7** button, the following display appears.

PLEASE NMI

Press **RESET** button on the back of BN Unit using a thin, pointed object.
The following display appears.

RESET KEY

If the AC adapter(AD-A70140) is inserted into the jack, and its output voltage is less than DC 4.4V the following display appears.

DET5V

Then pressing **ESC** button, **OTHERS MENU** display appears.

⑨ **EL ON CHECK** (BN-20 only)
Pressing **8** button, the blue back light is emitted.

⑩ **EL OFF CHECK** (BN-20 only)
Pressing **9** button, the blue back light is disappeared.
Then pressing **ESC** button, **TEST MENU** display appears.

⑪ **END(END)**
Pressing **10** button, the following display appears.

THE UNIT IS BEING INITIALIZED. **PLEASE WAIT.**

Then **CLOCK MODE** display appears.

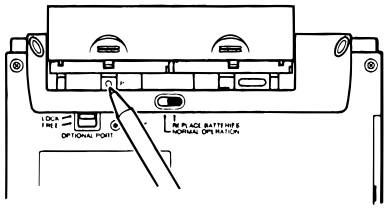
6. ERROR MESSAGES

Message	Cause	Action
THAT ALARM TIME IS ALREADY PASSED!	The time you are trying to set for an alarm is already passed.	This is merely a warning message that appears for about one second. After that, the dialog box closes and the data is stored without the alarm.
THAT ALARM TIME IS ALREADY USED!	The time you are setting for an alarm is already used.	Change the alarm time to one that is not yet used.
100 ALARMS ARE ALREADY SET!	The maximum allowable limit of 100 alarms are already set.	Wait until some of the existing alarms are used, or delete alarms you do not need to make room for new ones.
CHECK THE SECRET MEMORY AREA!	An alarm time has been reached for secret memory area data.	Enter the secret memory area to view details about the alarm.
ACCOUNT DATA CANNOT BE MODIFIED!	This message appears whenever you create a new account.	This is a reminder message, so no action by you is required.
THIS TRANSACTION CAUSES THE TOTAL LIMIT OF THIS ACCOUNT TO BE EXCEEDED!	The transaction you are registering will cause the total amount for the account where the transaction is being registered to exceed the allowable limit of 12 digits (11 digits for negative value).	Make the amount smaller or divide it between two or more transactions.
THIS TRANSACTION CAUSES THE TOTAL LIMIT OF THE OTHER ACCOUNT TO BE EXCEEDED!	The transfer of money between accounts you are registering will cause the total amount for the account to which the money is being transferred to exceed the allowable llimit of 12 digits (11 digits for negative value).	Make the amount smaller or divide it between two or more accounts.
DUAL WINDOW CLIPBOARD IS FULL! DELETE ITEMS YOU NO LONGER NEED TO MAKE ROOM FOR MORE.	You are trying to copy data to the Dual Window clipboard while it is already full.	Delete Dual Window clipboard data you no longer need to make room for new data.
WRONG PASSWORD!	The password you input while trying to enter the secret memory area does not match the password that is registered.	Input the correct password.
DATA ITEM NOT FOUND!	None of the data in memory matches the characters you specified for a search operation.	Check the characters you specified to make sure you did not make a mistake, or try searching for different characters.

Message	Cause	Action
MEMORY IS FULL!	You are trying to input data while memory is already full.	First try performing the memory management operation to see if more memory can be made available. If this message still appears, it means that memory is really full. Delete data you no longer need to make room for more data.
CELLS IN THE RANGE YOU ARE DELETING CONTAIN DATA. DELETE THEM ANYWAY?	Some of the cells in a range you are deleting in the SPREADSHEET Mode contain data.	Press **OK** to delete the cells and the data they contain, or press **ESC** to close the dialog box without deleting anything.
THIS OPERATION WILL PUSH SOME DATA OUTSIDE THE SPREADSHEET. CONTINUE?	The SPREADSHEET Mode operation you are performing will cause some of the cells of the spreadsheet to be pushed outside the range of the spreadsheet. This causes the data in the cells to be deleted.	Press **OK** to go ahead with the operation, or **ESC** to close the dialog box without doing anything.
SPREADSHEET IS TOO BIG!	The spreadsheet you are working with in the SPREADSHEET Mode is larger than the allowable maximum.	Reduce the amount of data contained in the spreadsheet or divide the data between two or more spreadsheets.

7. TROUBLESHOOTING

■ Power Supply

PROBLEM	POSSIBLE CAUSES	RECOMMENDED ACTIONS
Nothing appears on the display when power is turned on.	1.The battery switch on the back of the unit is set to REPLACE BATTERIES. 2.Battery power is low. 3.Display contrast is too light.	1.Slide the battery switch to NORMAL OPERATION. 2.Replace batteries (page 18). 3.Adjust display contrast (page 10).
The BN Unit does not operate normally after batteries are replaced.	Problem with BN Unit operational settings.	Perform the following procedure. 1.Slide the battery switch to the REPLACE BATTERIES position, and remove the battery compartment cover. 2.Use a thin, pointed object to press the **P** button inside the battery compartment.  3.Replace the battery compartment cover, and slide the battery switch back to NORMAL OPERATION. 4.Use a thin, pointed object to press the **RESET** button on the back of the unit. See “To reset the BN Unit” for details on the reset procedure. 5.After adjusting the display contrast and confirming that a message is visible on the screen, press **ESC** to clear the message.

■ Display Contrast

Display is totally black.	Display contrast is too dark.	Adjust display contrast (page 10).

■ Operation

Nothing happens when keys are pressed.	1.Battery power is low. 2.Exposure of the BN Unit to some external condition is interfering with proper operation.	1.Replace batteries (page 18). 2.Press the **P** button and then the **RESET** button. See procedure above.
Power suddenly turns off or contrast adjustment screen suddenly appears.	Battery power is low.	Replace batteries (page 18). • If any of the above does not restore your BN Unit to normal operation, contact your nearest CASIO dealer for servicing.

8. LSI PIN FUNCTION
8-1. CPU (LSI1)

This CPU is COB (Chip on board). Therefore this CPU cannot be replaced for repair.

CPU:UPD3066P (NC3020)

Pin No.	Name	I/O	Function
1 ~ 12	KO1 ~ KO12	O	Key scanning signals
13 ~ 20	KI1 ~ KI8	I	Key scanning signals
27	TCH	I	Signal to CPU for the start of data transfer between PC and BN Unit
28	AVCC	I	Power supply to A/D converter of CPU
29	VREF	I	Reference voltage terminal for A/D converter
30	AVSS	—	Ground for A/D converter of CPU
37	BLD1	I	Signal to CPU for detection of low battery (2.1 V)
38	BLD2	I	Signal to CPU for detection of forced power off (1.6 V)
40, 41	BZ0, BZ1	O	Terminals for drive of buzzer
43	TXD	O	Terminal for serial data transfer (both PC LINK and MODEM)
44	RXD	I	Terminal for serial data transfer (both PC LINK and MODEM)
46	INT0	I	Interrupt signal from Gate array to CPU
48	NMI	I	Non maskable interrupt signal from Gate array (LSI2) to CPU
53	PORT8	O	Display ON/OFF signal from CPU to LCD driver LSI
54	PORT7	I	Signal to CPU for selection of BN Units (BN-10: no EL)
55	PORT6	I	Signal to CPU for control of external port for MODEM
56	PORT5	O	Signal to EL driver IC for control (power ON/OFF) of backlight
57	PORT4	O	Control signal for power supply to LCD (power ON/OFF)
58	PORT3	I	Wait signal from Gate array (LSI2)
59	PORT2	O	RESET signal to flash ROM (LSI304 and LSI306)
60	PORT1	I	Ready/Bussy signal from flash ROM (LSI304, 306, 308)
61	PORT0	O	RESET signal to Gate array (LSI2) and flash ROM (LSI308)
62	VSEL1	I	Power supply (5 V) to CPU
63	VSEL2	I	Power supply (3 V) to CPU
67	CS8B	O	not used
68	CS7B	O	Chip select signal to MASK ROM (LSI301) and LSI308
69	CS6B	O	Chip select signal to LSI for MODEM passing trough Gate array
70	CS5B	O	Chip select signal to flash ROM (LSI304)
71	CS4B	O	Chip select signal to flash ROM (LSI306)
72	CS3B	O	Control signal to data latch IC (IC151) for control of power supply to LCD
73	CS2B	O	Chip select signal to LSI (LSI4, 5) for LCD segment driver
74	CS1B	O	Chip select signal to Gate array (LSI302)
75	CS0B	O	Chip select signal to RAM (LSI303)
76	WEB	O	Write enable signal to LSI for memory and Gate array
77	OEBP	O	Clock (10MHz) to Gate array
78	OEB	O	Output enable signal to LSI for memory and Gate array
80	GND	—	Ground for CPU
81 ~ 103	A0 ~ A22	O	Address bus terminals
104	GND	—	Ground for CPU
105 ~ 120	D0 ~ D15	I/O	Data bus terminals
121	GND	—	Ground for CPU
129	SW	I	Signal from battery cover switch to CPU
130	GND	—	Ground for CPU
131	PO	O	Terminal for system clock (10.14 MHz)
132	PI	I	Terminal for system clock (10.14 MHz)
133	VCC1	I	Power supply to logic and oscillator circuit of CPU (2.2 V)
134	XO	O	Terminal for oscillator circuit of interior clock (32.768 kHz)
135	XI	I	Terminal for oscillator circuit of interior clock (32.768 kHz)
136	VCC2	I	Power supply to buzzer and keys
143	RESET	I	Reset terminal to CPU (from P key)

8-2. Gate Array (LSI2)

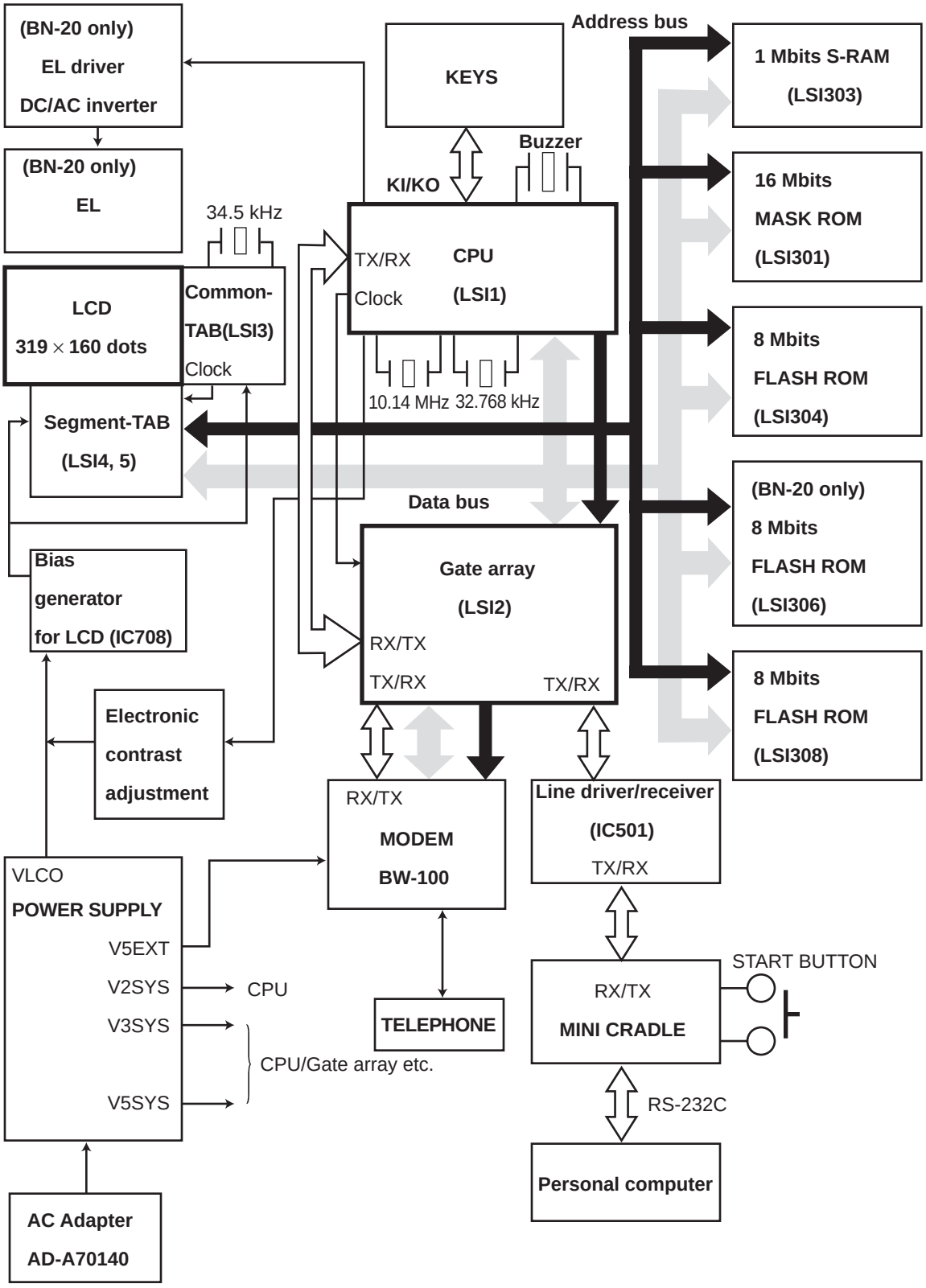
Gate array: FM3416

Pin No.	Name	I/O	Function
1	VDD1	I	Power supply to Gate array (5 V)
2	V5WEB	O	not used
3	V5A20	O	not used
4	BSYB	I	not used
5	V5A21	O	not used
6	V5A16	O	Address bus to ROM for MODEM
7	V5A22	O	not used
8	V5A15	O	Address bus to ROM for MODEM
9	VSS	—	Ground for Gate array
10	V5A23	O	ER (Request signal to MODEM for operation of MODEM)
11	V5A12	O	Address bus to ROM for MODEM
12	V5A24	O	RS (Request signal to MODEM for sending data)
13	V5A7	O	Address bus to ROM for MODEM
14	V5A25	O	SD (Data to send from BN Unit to MODEM)
15	V5A6	O	Address bus to ROM for MODEM
16	V5A5	O	Address bus to ROM for MODEM
17	PORT0	I	RESET signal from CPU (LSI1)
18	VDD2	I	Power supply to Gate array (3 V)
19	VSS	—	Ground for Gate array
20	RESET	O	RESET signal to IC for MODEM
21	V5A4	O	Address bus to ROM for MODEM
22	V5A3	O	Address bus to ROM for MODEM
23	INPACKB	I	RD (Data to send from MODEM to BN Unit)
24	V5A2	O	Address bus to ROM for MODEM
25	REGB	O	not used
26	V5A1	O	Address bus to ROM for MODEM
27	BVD2	I	DR (OK signal from MODEM in response to ER)
28	V5A0	O	Address bus to ROM for MODEM
29	BVD1	I	CD (Information signal from MODEM to BN Unit (Detection of carrier))
30	VSS	—	Ground for Gate array
31	CD2B	I	not used
32	V5D8	I/O	not used
33	V5D1	I/O	Data bus for ROM of MODEM
34	V5D9	I/O	not used
35	V5D2	I/O	Data bus for ROM of MODEM
36	V5D10	I/O	not used
37	VDD1	I	Power supply to Gate array (5 V)
38	P3	I	Clock (10 MHz) from CPU
39 ~ 44	D10 ~ D15	I/O	Data bus for CPU
45	VSS	—	Ground for Gate array
46	V5WAITB	I	not used
47 ~ 53	D3 ~ D9	I/O	Data bus for CPU
54	VDD2	I	Power supply to Gate array (3 V)
55	VSS	—	Ground for Gate array
56 ~ 58	D0 ~ D2	I/O	Data bus for CPU
59	CS6B	I	Chip select signal to LSI for MODEM passing trough Gate array
60	WEB	I	Write enable signal from CPU
61	OEB	I	Output enable signal from CPU
62	CS1B	I	Chip select signal from CPU
63	P5	O	Control signal to power supply to MODEM (5 V ON/OFF)
64	V5D0	I/O	Data bus for ROM of MODEM
65	VDD1	I	Power supply to Gate array (5 V)
66	VSS	—	Ground for Gate array

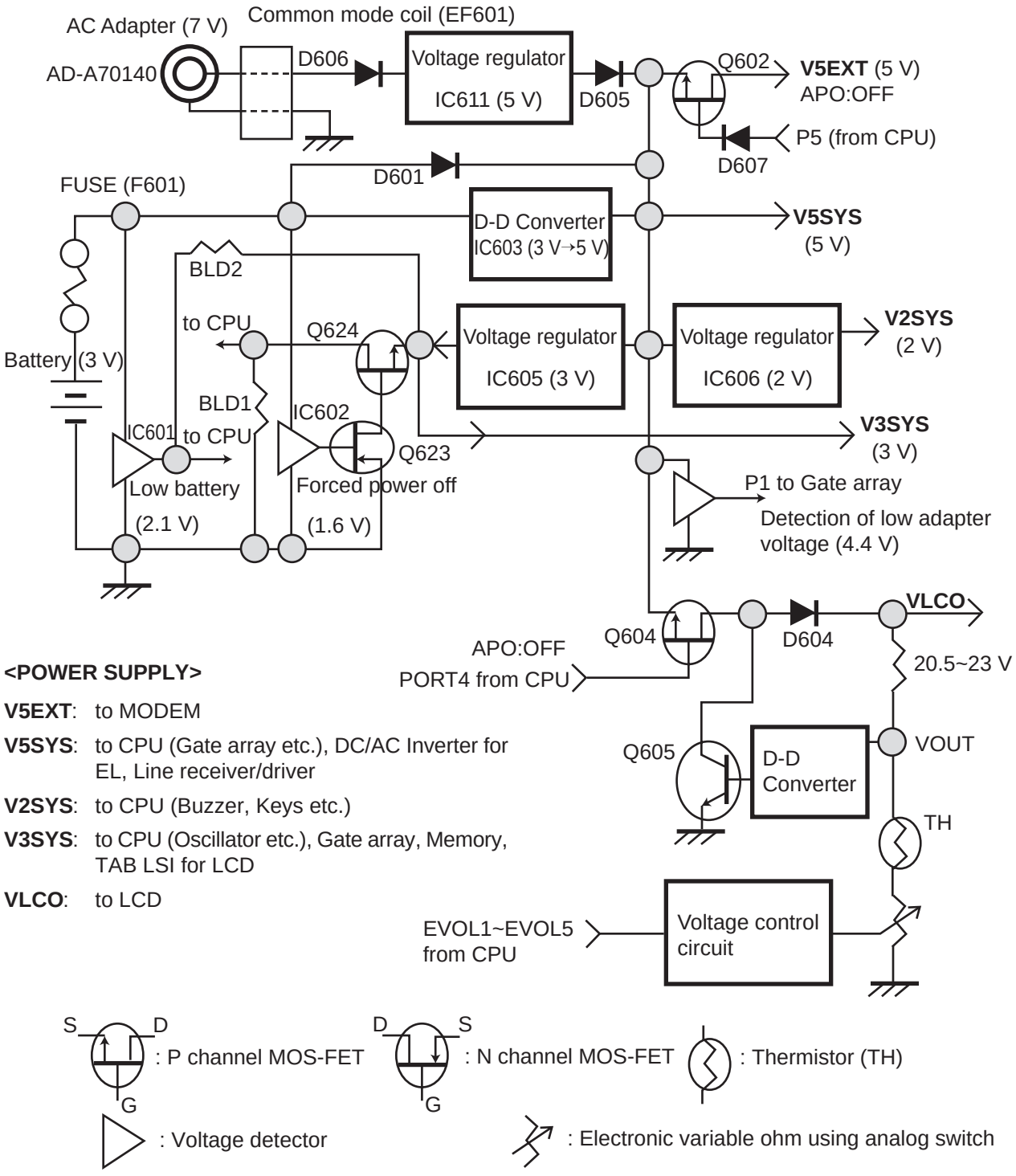
Pin No.	Name	I/O	Function
67	P7	I	not used
68	TXD3	O	not used
69	RXD3	I	not used
70	TXD	I	Terminal for serial data transfer (both PC LINK and MODEM)
71	RXD	O	Terminal for serial data transfer (both PC LINK and MODEM)
73	VDD1	I	Power supply to Gate array (5 V)
74	RS	O	RS (Request signal to PC for sending data)
75	ER	O	ER (Request signal to PC for operation of PC)
76	P4	O	Control signal (standby) to line receiver/driver IC (IC501)
77	PORT3	O	Wait signal to CPU
78	P2	I	Reset terminal to Gate array (from reset key)
79	A21	I	Address bus from CPU
80	CD	I	CD (Information signal from PC to BN Unit (Detection of carrier))
81	VSS	—	Ground for Gate array
82	V5IOIS16B	I	CS (OK/NG signal from MODEM in response to RS)
83 ~ 89	A14 ~ A20	I	Address bus from CPU
90	VDD2	I	VDD2
91	VSS	—	Ground for Gate array
92	P1	I	Detection of low 5 V power (detection point:4.5 V)
93	P0	O	Non maskable interrupt signal to CPU
94 ~ 101	A6 ~ A13	I	Address bus from CPU
102	VSS	—	Ground for Gate array
103 ~ 108	A0 ~ A5	I	Address bus from CPU
109	VDD1	I	Power supply to Gate array (5 V)
110	DR	I	DR (OK signal from PC in response to ER)
111	CS	I	CS (OK/NG signal from PC in response to RS)
112	RD	I	Data to send from PC to BN Unit passing through the cradle
113	SD	O	Data to send from BN Unit to PC passing through the cradle
114	V5A19	O	not used
115	V5A14	O	Address bus to ROM for MODEM
116	V5A18	O	Address bus to ROM for MODEM
117	VSS	—	Ground for Gate array
118	V5A13	O	Address bus to ROM for MODEM
119	V5A17	O	Address bus to ROM for MODEM
120	V5A8	O	Address bus to ROM for MODEM
121	V5IOWRB	O	Write signal to ROM for MODEM
122 ~ 124	V5A9 ~ V5A11	O	Address bus to ROM for MODEM
125	INT1	O	Interrupt signal from CPU
126	VDD2	I	Power supply to Gate array (3 V)
127	VSS	—	Ground for Gate array
128	V5D15	I/O	not used
129	V5CE1B	O	Chip enable signal to ROM for MODEM
130	V5D14	I/O	not used
131	V5D7	I/O	Data bus for ROM of MODEM
132	V5IORDB	O	Output enable signal to ROM for MODEM
133	V5D13	I/O	not used
134	CD1B	I	not used
135	V5D6	I/O	Data bus for ROM of MODEM
136	V5D12	I/O	not used
137	VDD1	I	Power supply to Gate array (5 V)
138	VSS	—	Ground for Gate array
139	V5D5	I/O	Data bus for ROM of MODEM
140	V5D11	I/O	not used
141	V5D4	I/O	Data bus for ROM of MODEM
142	V5D3	I/O	Data bus for ROM of MODEM
143	V5OEB	O	not used
144	V5CE2B	O	not used

9. CIRCUIT EXPLANATION

9-1. Block Diagram



9-2. Power Supply



<POWER SUPPLY>

V5EXT: to MODEM

V5SYS: to CPU (Gate array etc.), DC/AC Inverter for EL, Line receiver/driver

V2SYS: to CPU (Buzzer, Keys etc.)

V3SYS: to CPU (Oscillator etc.), Gate array, Memory, TAB LSI for LCD

VLCO: to LCD

1. Refer to **9-1. Block Diagram**.
2. Common mode coil (EF601) is used to prevent the emission of high frequency noise from AC Adapter jack.

3. When battery voltage becomes to be about 2.1 V, BLD1 terminal voltage becomes to be about 0 V and the low battery message appears even if AC Adapter is used.
4. When battery voltage becomes to be about 1.6 V, BLD2 terminal voltage becomes to be about 0 V and the power is forced to be turned off to prevent the corruption of memory even if AC Adapter is used.
5. When AC Adapter voltage becomes to be about 2~3 V instantly and suddenly, BLD2 terminal voltage becomes to be about 0 V and the power is forced to be turned off.
6. When adapter output voltage becomes to be about 4.5 V, P1 terminal voltage becomes to be about 0 V, and the power is force to be turned off.
7. The thermal compensation is set to VLCO voltage circuit for LCD using a thermistor (TH). When ambient temperature becomes low, LCD display becomes dimmer. At this time, VLCO terminal voltage becomes higher by a thermistor (TH), and then LCD display becomes lighter.
8. FUSE (F601) adjacent to the battery (F601) will be cut off with current of 1A for over 2 seconds.
9. If batteries are not loaded or battery power is low, BLD2 terminal becomes to be about 0 V even if AC Adapter is used. Therefore, BN Unit power is not turned on or is forced to be turned power off as described to the page 15.

9-3. Function

Refer to **8. LSI PIN FUNCTION**, **9-1. Block Diagram** and **10. SCHEMATIC DIAGRAMS**.

9-3-1. Memory

LSI303 is Static RAM for operation, and not for user with BN Unit itself, but for user concerning MODEM BW-100.
User's data are saved in flash ROM (LSI304 (LSI304 and LSI306 with BN-20)) with BN Unit itself, and saved in flash ROM (LSI308) concerning MODEM BW-100.
And LSI301 is a mask ROM for operation.
Data saved in a flash ROM are not deleted even if power is not supplied. Therefore, the lithium battery for memory backup is not necessary with BN Unit. It is easy to write data using the flash ROM like RAM. And the overall deletion of data is performed instantly using the flash ROM different from EEPROM.
LSI308 is a flash ROM for OS program.
Data for **OPERATION CHECK** are saved in this LSI308 also.
NVRAM (Non Volatile RAM) are set interior TAB LSI (LSI4, LSI5) for driving LCD.
Therefore, the display made before battery replacement appears again after battery replacement.

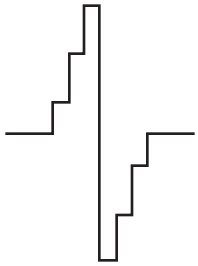
9-3-2. P Key and RESET Key

Pressing P Key, CPU, Gate array and other devices are forced to be initialized using the circuit for RESET (RESET by hardware) even if power is turned off.
On the other hand, pressing RESET Key, CPU, Gate array and other devices are forced to be initialized using the software because RESET Key is connected to NMI (Non-Maskable Interrupt) terminal. This RESET by software can be performed while turning power on as described to the page 16.
If any malfunctions or (and) abnormal symptoms exist even after this RESET operation by software, try to initialize CPU pressing P Key (RESET by hardware).

9-3-2. Line receiver/ driver IC (IC501)

Miss data transfer is often occurred by long wire data transfer lines and rapid data transfer without a line receiver/ driver. Data transfer speed is 38400 b.p.s. (MAX.) with BN Unit.
Data transfer speed of CASIO Digital Diary prior BN Unit is 9600 b.p.s..
So the high speed line receiver/ driver IC (IC501) is necessary with BN Unit.
This IC is satisfied with electrical requirement of EIA-232E and CCITT V.28.

9-3-3. Bias voltage generator IC (IC708) for LCD



LCD is driven by steps shaped AC voltage as shown to the right.
The number of steps shown to the right is three. This is called 1/3 bias. Generally, if the quantity of pixels in a LCD common line is **N** dots, the quantity of bias is **1/$\sqrt{N}$** . At this time, contrast of LCD display becomes maximum. The quantity of pixels in a LCD common line is 160 dots. Therefore, the quantity of bias is set to 1/13 by this bias voltage generator circuit.

9-3-4. Countermeasure against EMI (Electro Magnetic Interference) with BN Unit

The copper films for shield and wires connecting between grounds on PC board are used for countermeasure against EMI. If these parts doesn't exist, data transfer between BN Unit and MODOEM /PC will not be performed.

9-3-5. EL (Electroluminescence) driver IC (IC701) (BN-20 only)

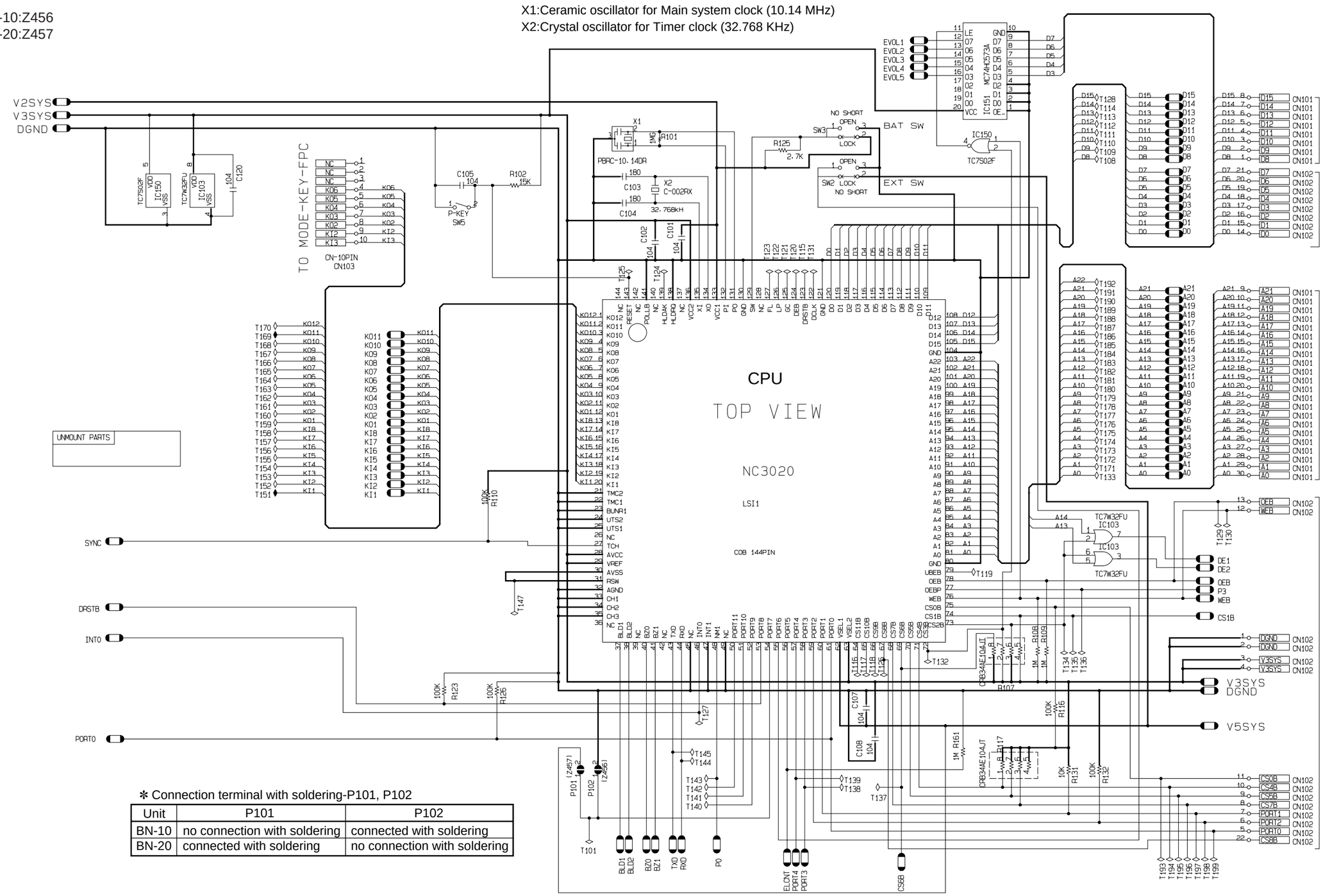
This IC is a DC/AC inverter for EL.
V5SYS terminal voltage (DC 5 V) is converted to AC output terminal voltage (AC 180 V_{P-P}, 100 Hz, triangle wave form) loading EL. When V5SYS terminal voltage becomes less than about 4.5 V or EL button on the keyboard is pressed twice and so on , ENA terminal voltage becomes to be about 0 V, and blue light from EL disappears.

10. SCHEMATIC DIAGRAMS

Main block (PCB ASSY-A140806)-1/5

*BN-10:Z456
BN-20:Z457

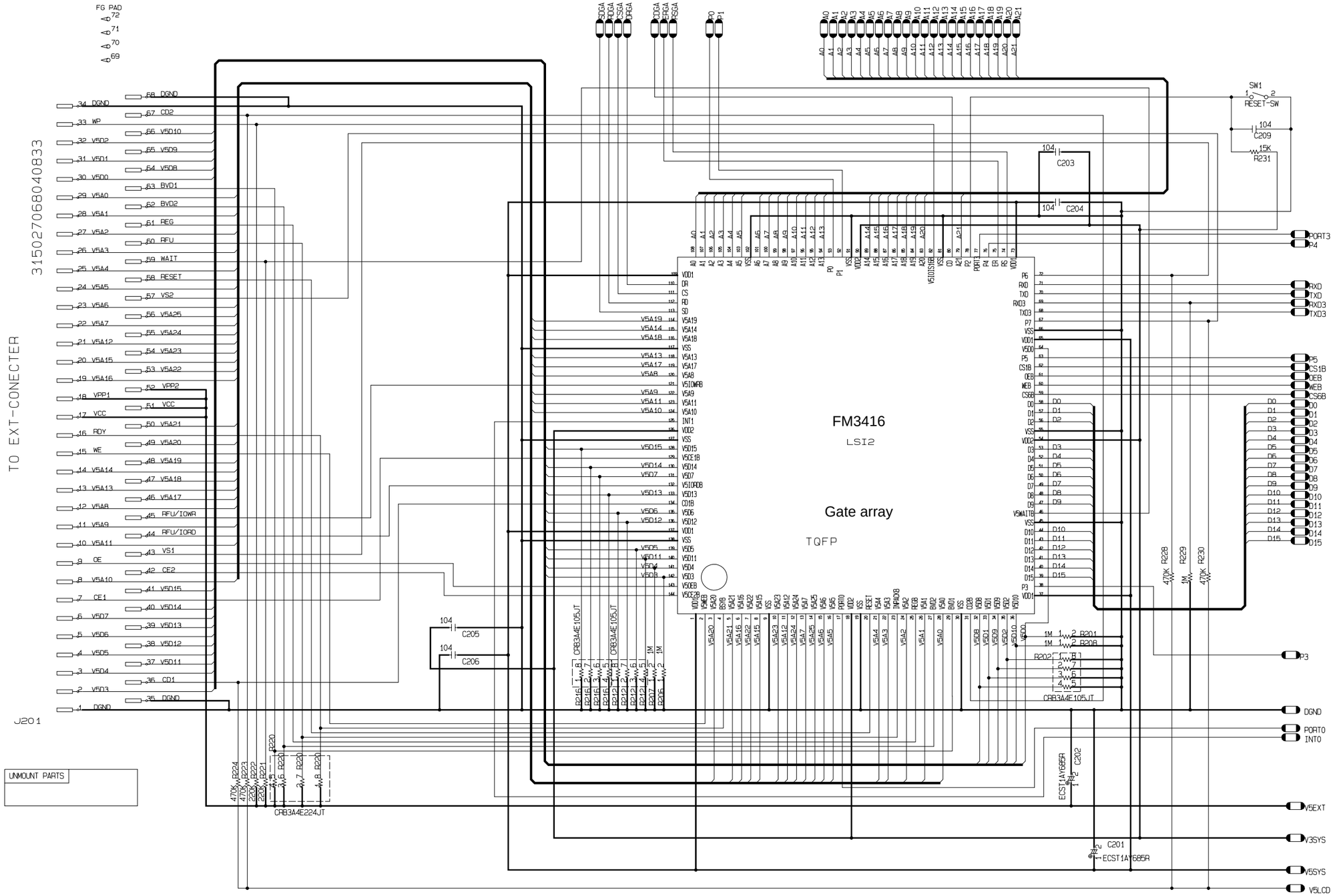
X1:Ceramic oscillator for Main system clock (10.14 MHz)
X2:Crystal oscillator for Timer clock (32.768 KHz)



✻ Connection terminal with soldering-P101, P102

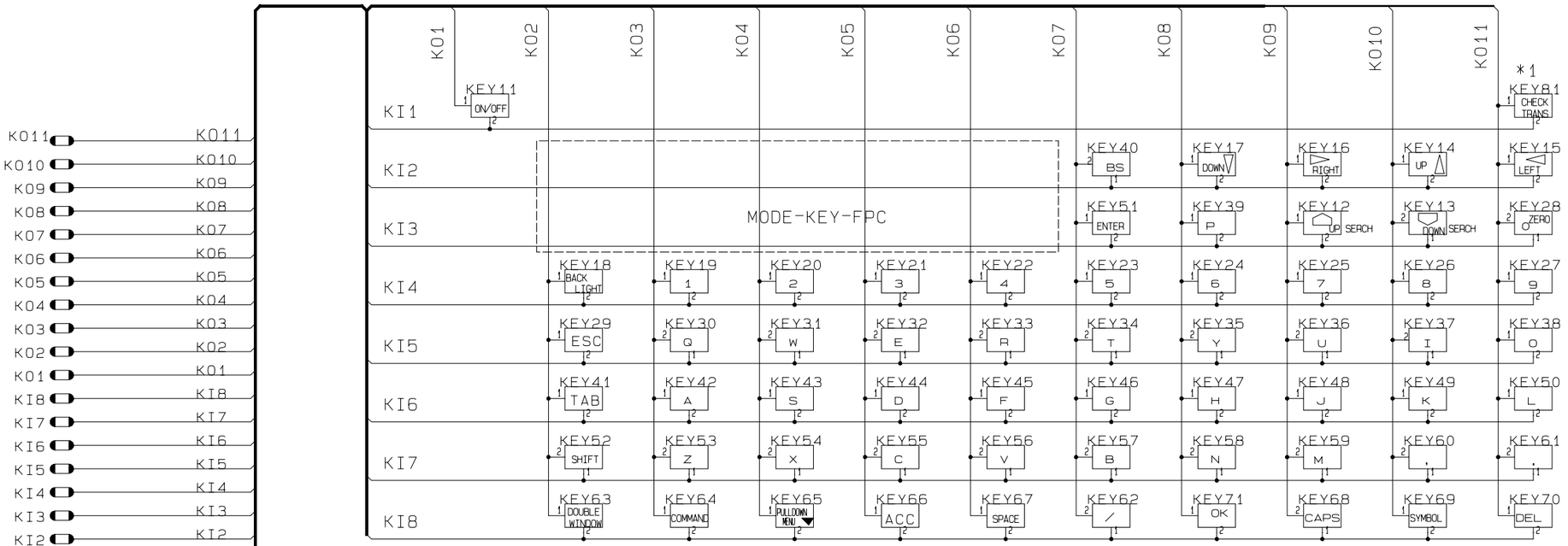
Unit	P101	P102
BN-10	no connection with soldering	connected with soldering
BN-20	connected with soldering	no connection with soldering

Main block (PCB ASSY-A140806)-2/5

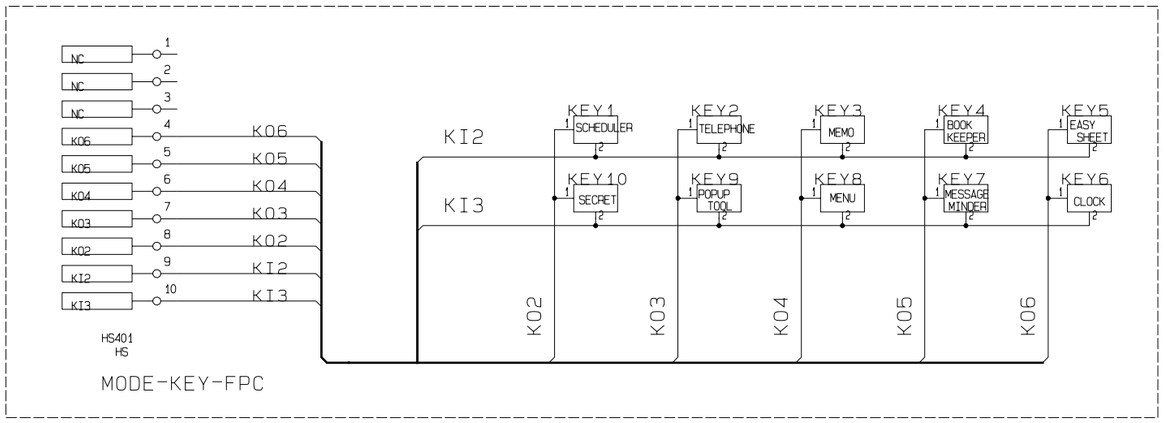


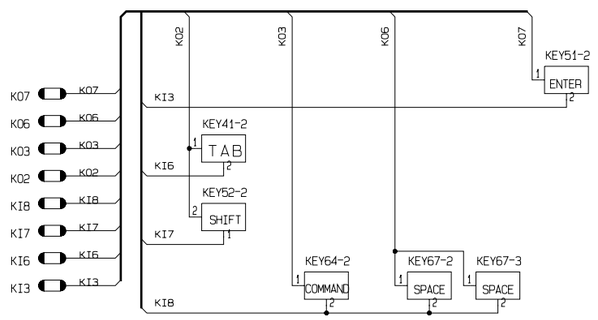
Main block (PCB ASSY-A140806)-3/5

UNMOUNT PARTS

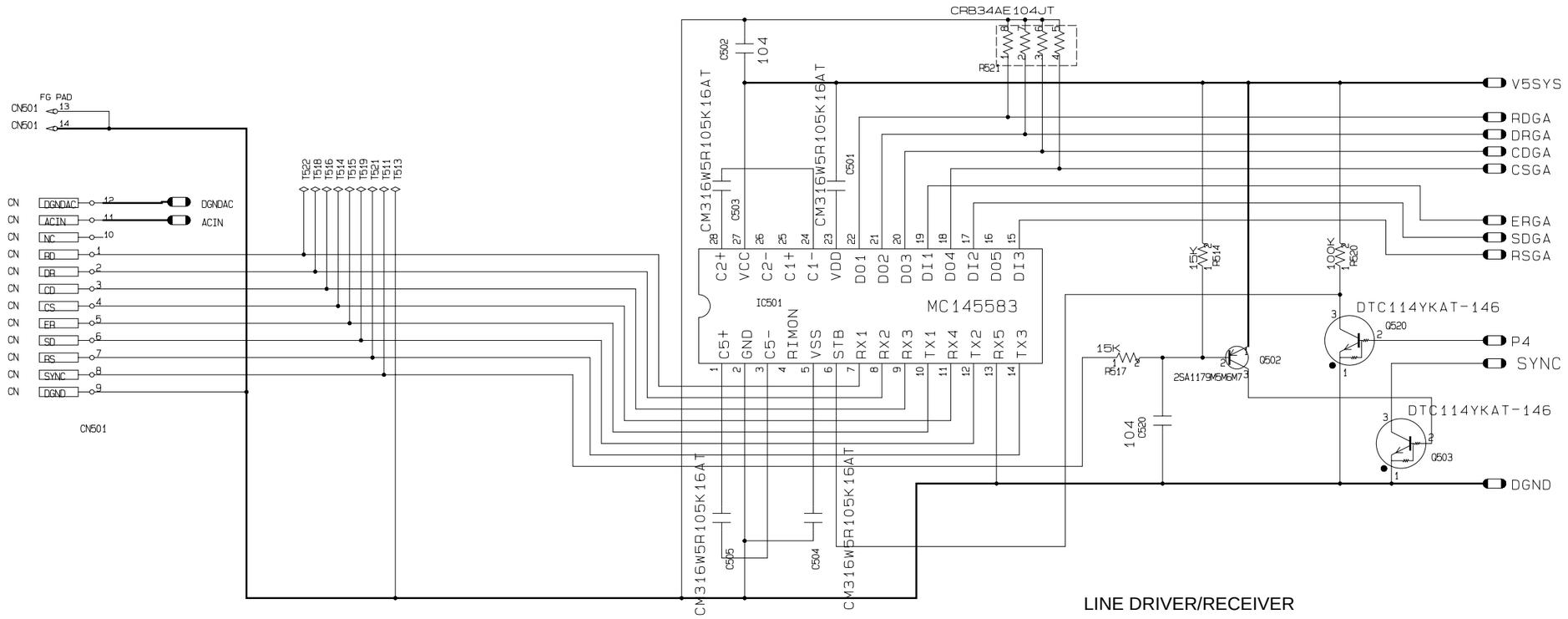


✻ 1 KEY81 (CHECK/TRANS KEY)
is a key for TEST, not one for users.

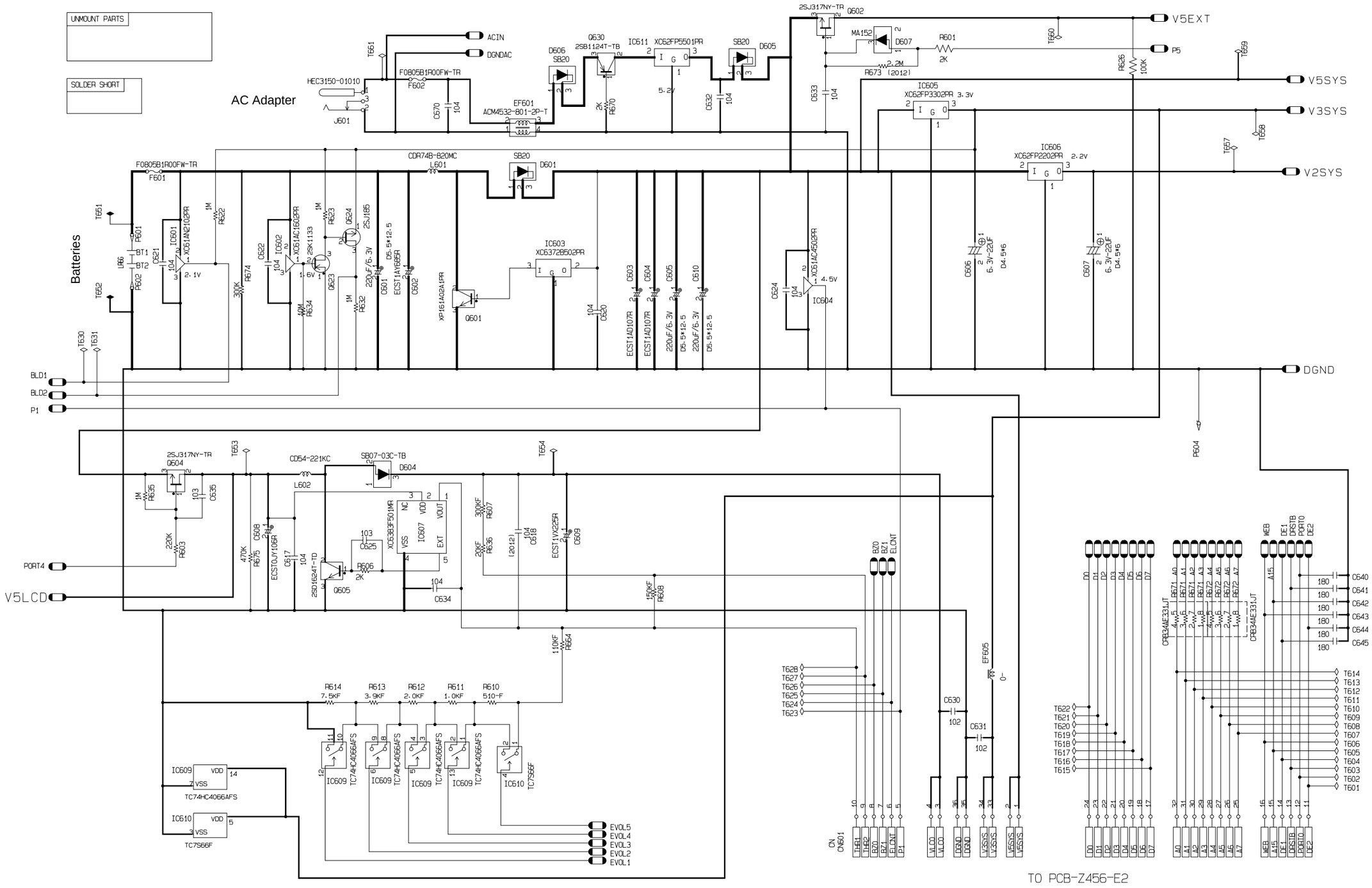




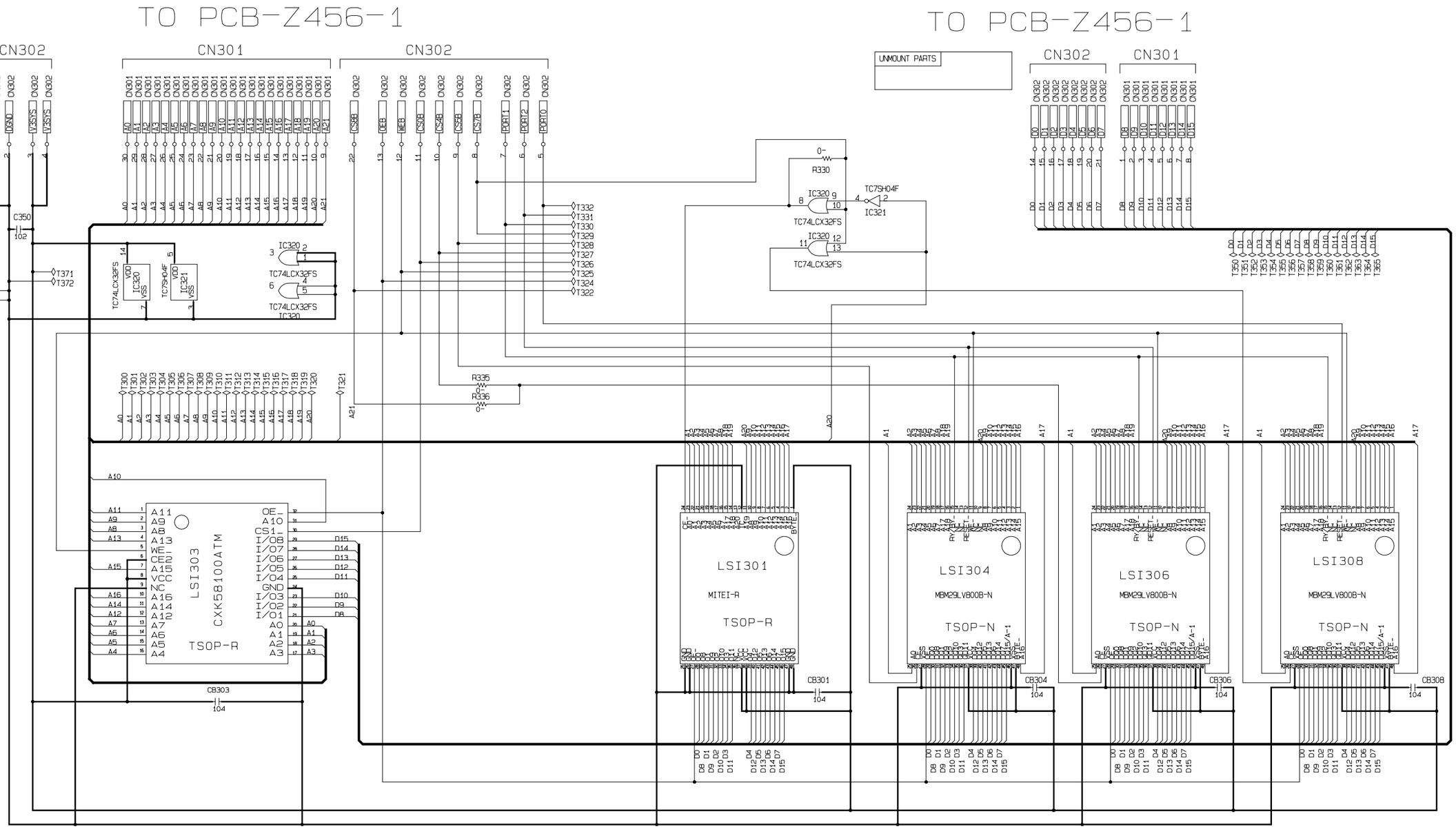
Main block (PCB ASSY-A140806)-4/5



Main block (PCB ASSY-A140806)-5/5



Memory block (PCB ASSY-A241123)



ROM	IC320	IC321	R330	LSI308
MASK ROM	not used	not used	**used**	not used
FLASH ROM	**used**	**used**	not used	**used**

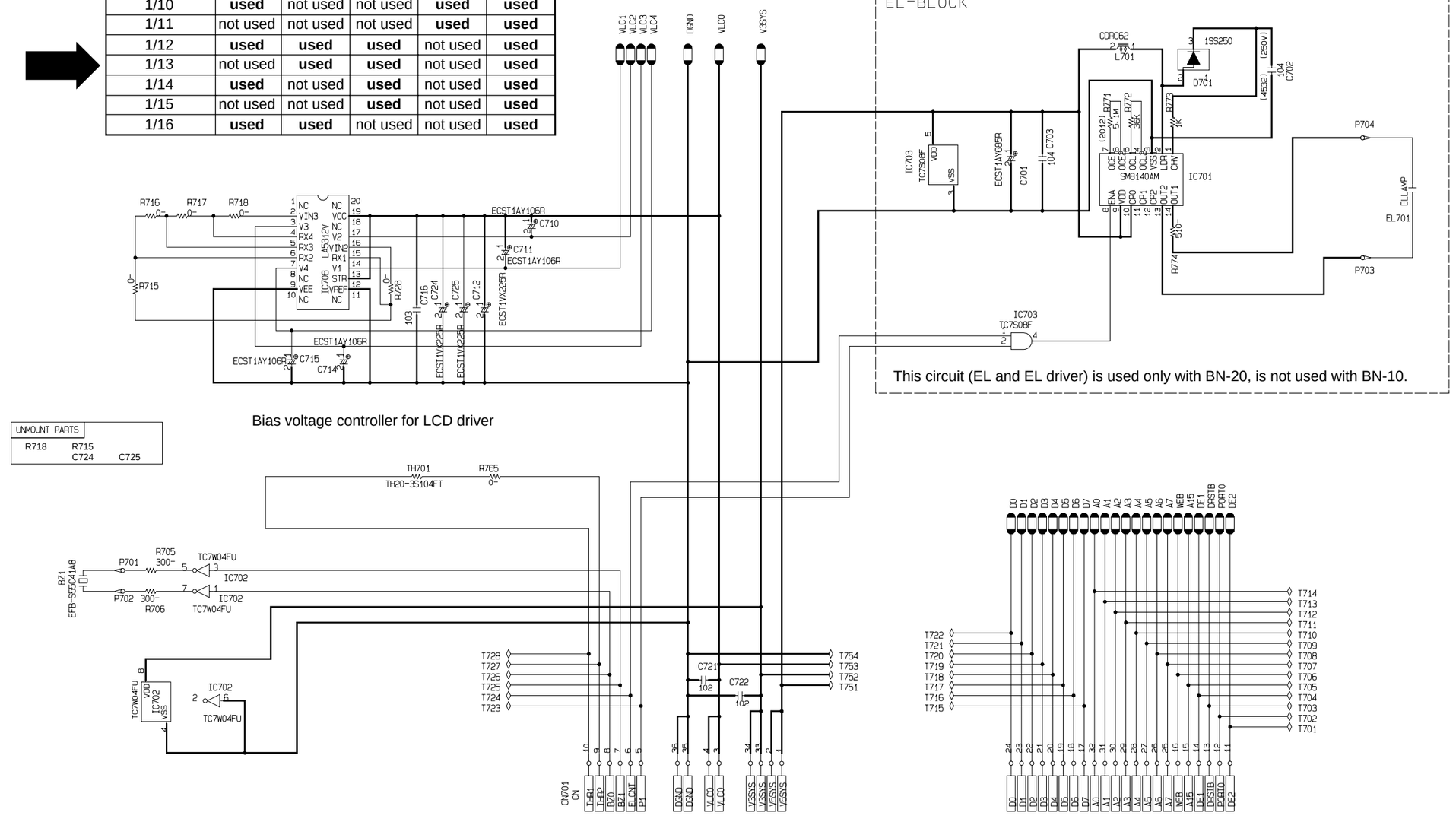
Unit's Name	LSI304	LSI306	R335	R336
BN-10	**used**	not used	not used	not used
BN-20	**used**	**used**	**used**	not used

At first FLASH ROM will be used, then MASK ROM will be used.

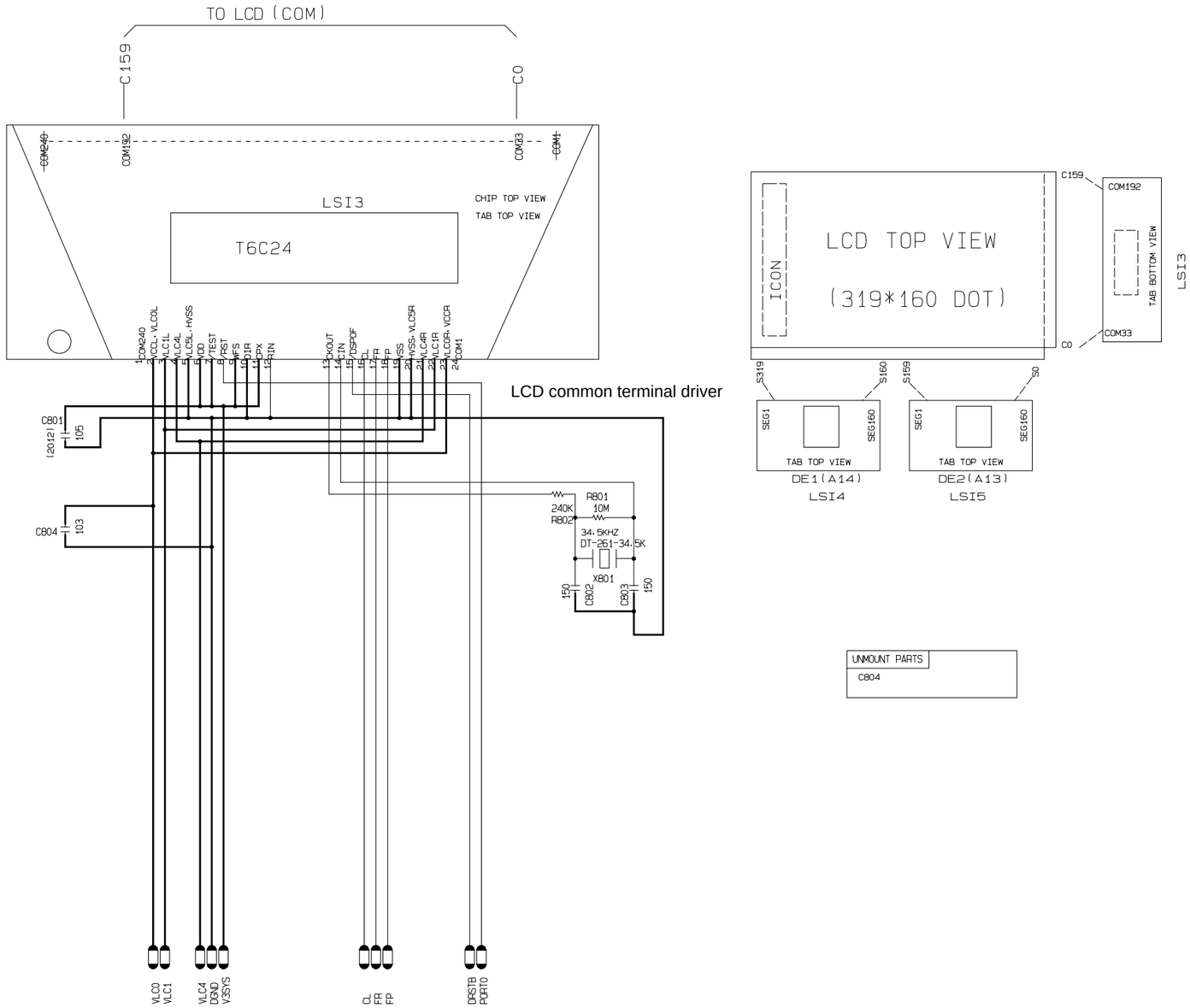
Display block (LCD ASSY-A140809/A140814)-1/3

Actually, bias for LCD is set to 1/13.

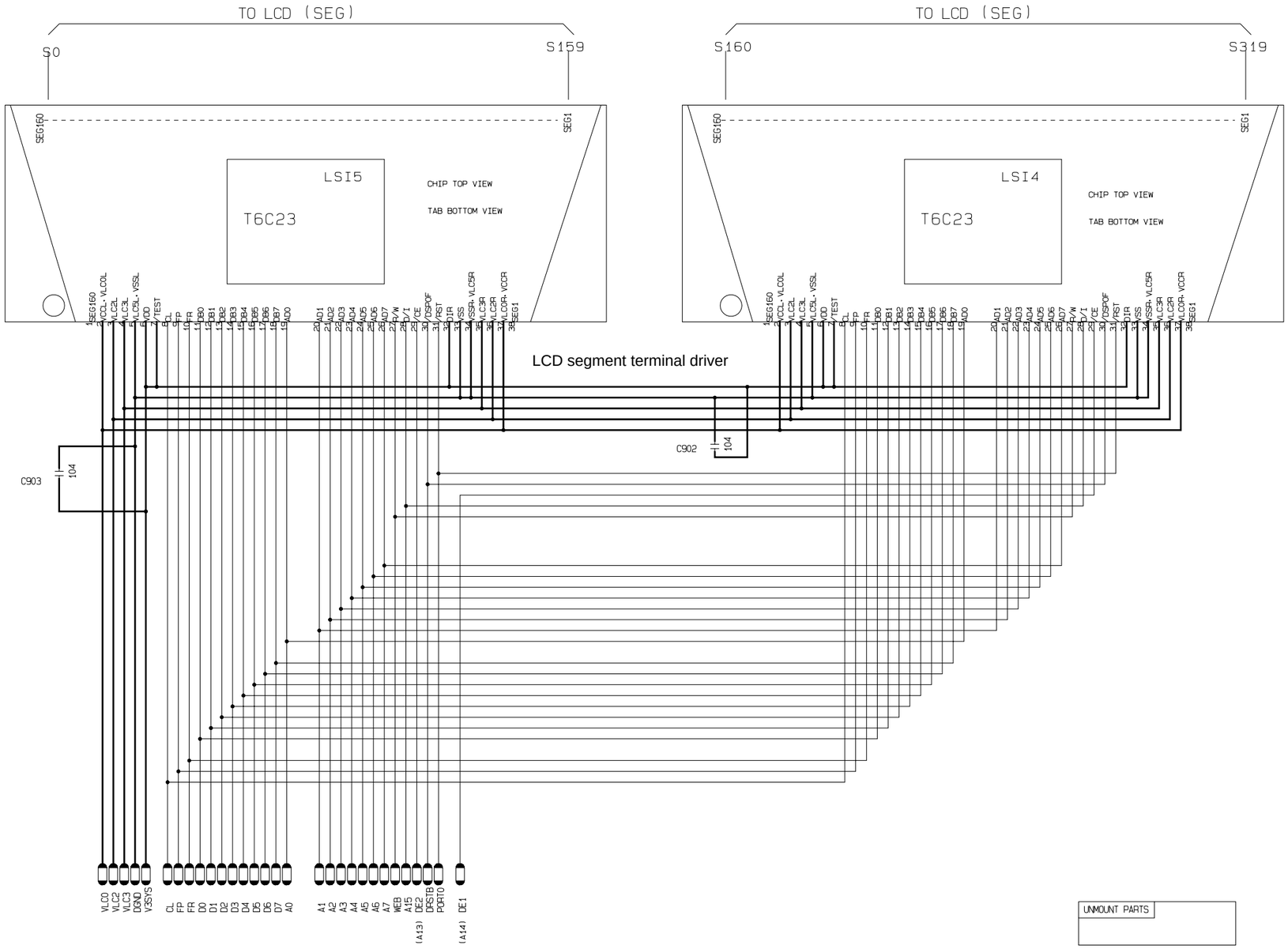
BIAS for LCD	R718	R717	R716	R715	R728
1/10	**used**	not used	not used	**used**	**used**
1/11	not used	not used	not used	**used**	**used**
1/12	**used**	**used**	**used**	not used	**used**
1/13	not used	**used**	**used**	not used	**used**
1/14	**used**	not used	**used**	not used	**used**
1/15	not used	not used	**used**	not used	**used**
1/16	**used**	**used**	not used	not used	**used**


EL-BLOCK
This circuit (EL and EL driver) is used only with BN-20, is not used with BN-10.
Bias voltage controller for LCD driver
UNMOUNT PARTS
R718 R715
C724 C725
TO PCB-Z456-1
TO PCB-Z456-1

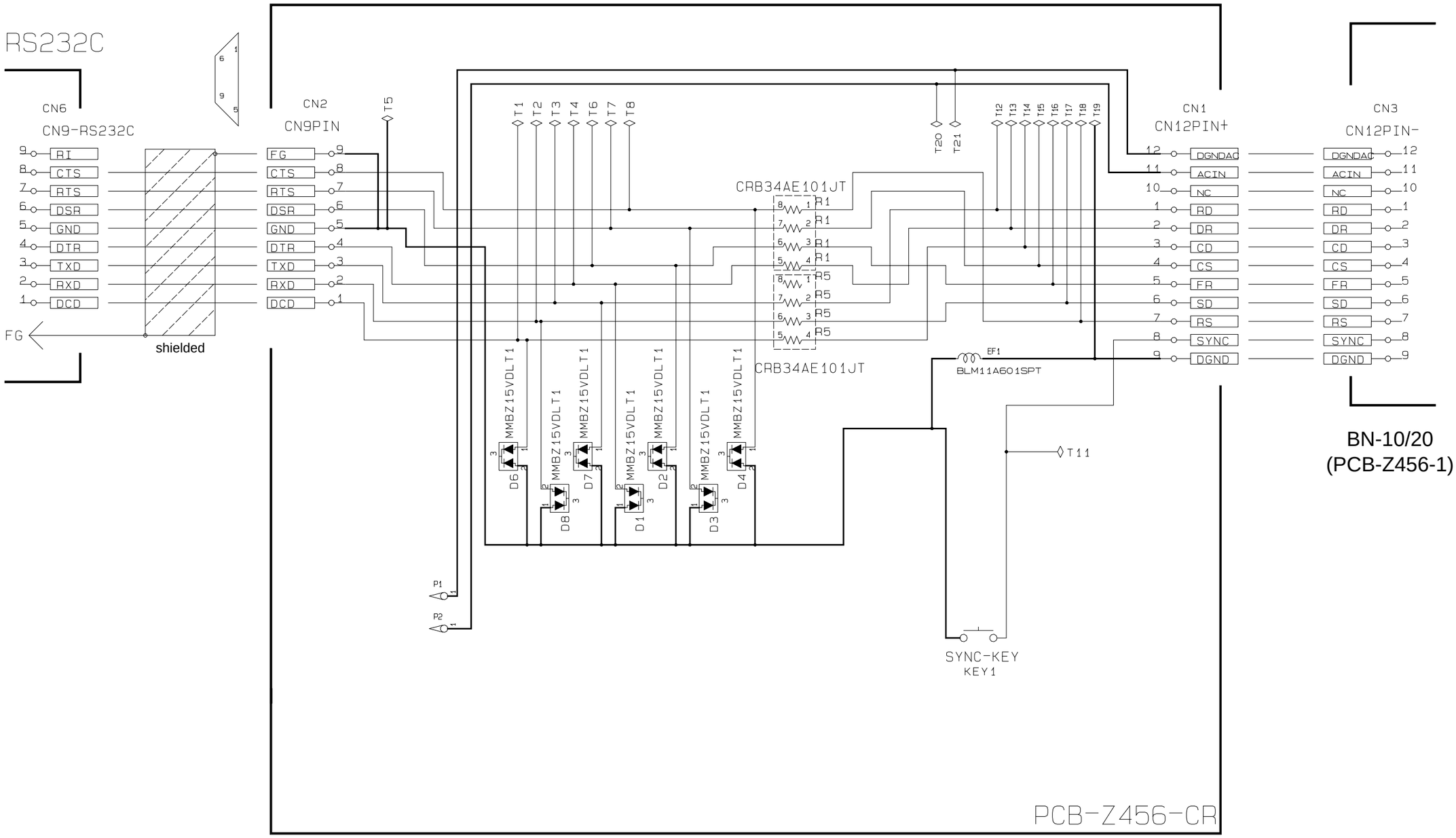
Display block (LCD ASSY-A140809/A140814)-2/3



Display block (LCD PCB ASSY-A140809/A140814)-3/3



Cradle (A140805)



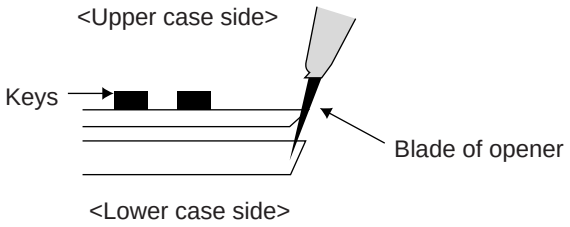
BN-10/20
(PCB-Z456-1)

11. DISASSEMBLY

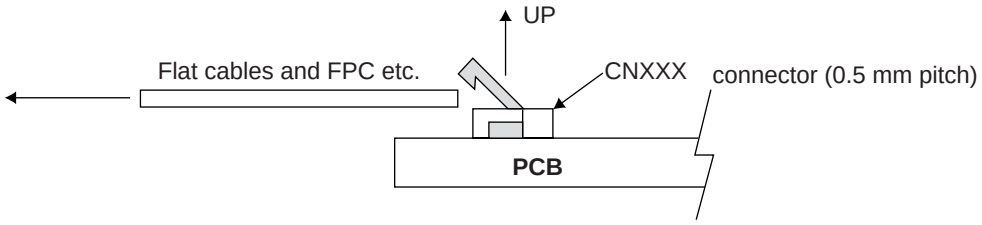
*** Refer to 13. EXPLODED VIEW** (the parts (⑫ and ㉔) are used for only BN-20).

11-1. Disassembly for keyboard side

1. Slide the battery switch ㊼ on the back of the BN Unit to the REPLACE BATTERIES position.
2. Remove the battery cover ㊴.
3. Remove two screws (S1).
4. Remove the lower case ㊲ (+ the cover ㊶) using an opener as shown below.
   * At this time, take care not to break ribs.



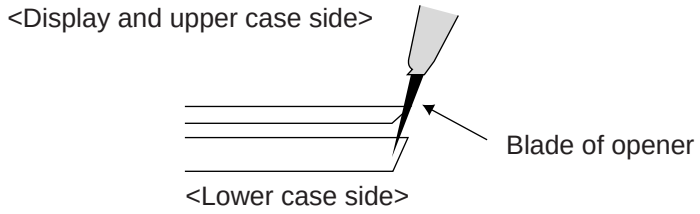
5. Remove the reset rubber key ㊶ taken in the lower case ㊲.
6. Remove the button ㊵.
7. Remove the battery switch ㊼.
8. Remove the lever ㊹.
9. Remove the switch ㊽ for MODEM.
10. Remove three screws (S2).
11. Remove two flat cables ㊺ ㊻ from two connectors (**CN101** and **CN102**) as shown below.



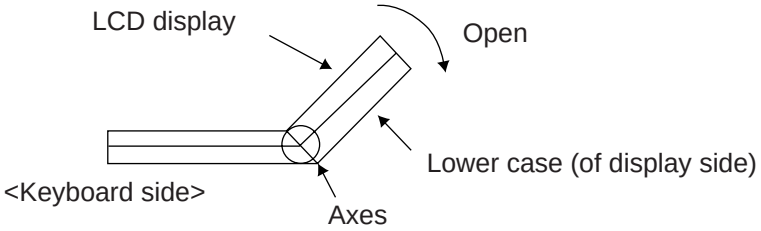
12. Remove two flat cables ㊺ ㊻ from two connectors (**CN301** and **CN302**) as shown above.
13. Remove a screw (S3).
14. Remove the inner case ㊳.
15. Remove the rubber key for P button ㊶ taken in the inner case ㊳.
16. Remove the cover ㊸ and tiny spring ㊿.
    * Take care not to lose the tiny spring ㊿.
17. Remove the FPC ⑱ from the connector (CN601).
18. Remove the black wire (WIR1) soldered to the main PCB ASSY ㉘.
19. Remove the carbon sheet ㉙ from the connector **CN103** as shown to the item 11.
20. Remove six screws (S4) and two washers (W1).
21. Remove Main PCB ASSY ㉘.
22. Remove the rubber sheet ㉗.
23. Remove keys (㉕ ㉛ ㉜ ㉝ ㉟).
24. Remove the sheet for mode keys ㉚.
25. Remove the shield plate ㊱.
26. Remove the carbon sheet ㉙.

11-2. Disassembly for display side

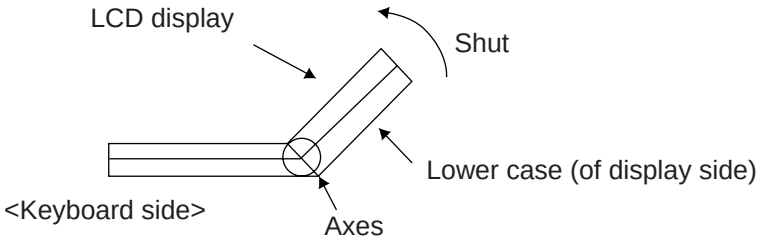
1. Perform the items 1 ~ 9 and 17 of **Disassembly of keyboard side** .
2. Remove two screws (S5).
3. Remove the lower case (14) using a opener as shown bellow.



Then remove two axes (AX1) of this lower case while opening out as shown below.



4. Remove FPC (18) from the connector **CN701** of PCB ASSY (3) as shown to the item 11 of **Disassembly of keyboard side**.
5. Remove **Display side** from keyboard side while shutting as shown below.



6. Remove two screw (S6).
7. Remove the metal fittings (23).
8. Remove six screws (S7), two screws (S8) and two washers (W2).
   Next, remove the upper case (13), and then peel the frame (17) from (13) while taking out this frame from two holes (A) of this upper case.
9. Remove two wires (WIR2) soldered to PCB ASSY (3).
10. Peel the buzzer (19) from the inner case (15).
11. Take out the LCD ASSY (16) after peeling the inner case (15) from PCB ASSY.
12. Disassemble the LCD ASSY referring to **EXPLODED VIEW (1/2)** and **CROSS SECTION of LCD ASSY** of **EXPLODED VIEW (2/2)**.

12. PARTS LIST

N	Item	Code No.	Parts Name	Specification	Applicable	Q	R
	PCB ASSY (A140806)						
N	LSI2	2012 5804	LSI	FM3416	Common	1	B
	IC501	2012 5543	IC/MOS	MC145583VFEL	Common	1	C
	X2	2590 1288	OSCILLATOR/CRYSTAL	C-002RX	Common	1	B
	J601	3502 2233	JACK	HEC3150-010010	Common	1	C
N	J201	3502 2371	CONNECTOR/CARD	315027068043833	Common	1	C
N	1	6420 9150	SPRING/BATTERY	A442753-1	Common	1	X
N	2	6420 9160	SPRING/BATTERY	A442754-1	Common	1	X
	X1	2590 2708	RESONATOR	PBRC-10.14DR	Common	1	C
	D607	2390 1442	DIODE	MA152K-(TX)	Common	1	C
N	CN101	3502 2372	CONNECTOR/30P	FH12-30S-0.5SH-S	Common	1	C
N	CN102	3502 2373	CONNECTOR/22P	FH12-22S-0.5SH-S	Common	1	C
N	CN103	3502 2374	CONNECTOR/10P	FH12-10S-0.5SH-S	Common	1	C
N	CN501	3502 2376	CONNECTOR	RL01-R12P	Common	1	C
N	CN601	3502 2375	CONNECTOR	FH12-36S-0.5SH-S	Common	1	C
	D601,605	2390 2884	DIODE/SCHOTTKY	SB20-03P-TD	Common	3	C
	D604	2390 0623	DIODE/SCHOTTKY	SB07-03C-TB	Common	1	C
	F601,602	3632 0711	FUSE	F0805B1R00FW-TR	Common	2	B
	IC103	2105 5831	IC/MOS	TC7W32FU-TE12L	Common	1	C
	IC150	2105 3990	IC/MOS	TC7S02F-TE85L	Common	1	C
N	IC151	2105 6391	IC/MOS	MC74HC573ADTEL	Common	1	C
N	IC601	2105 6400	IC/MOS	XC61AN2102PR	Common	1	C
N	IC602	2105 6174	IC/MOS	XC61AC1602PR	Common	1	C
N	IC603	2105 6352	IC/MOS	XC6372B502PR	Common	1	C
N	IC604	2105 6209	IC/MOS	XC61AC4502PR	Common	1	C
N	IC605	2105 6350	IC/MOS	XC62FP3302PR	Common	1	C
N	IC606	2105 6349	IC/MOS	XC62FP2202PR	Common	1	C
	IC607	2105 5999	IC/MOS	XC6383F501MR	Common	1	C
	IC609	2114 4683	IC/MOS	TC74HC4066AFS(EL)	Common	1	C
	IC610	2105 6167	IC/MOS	TC7S66F-TE85R	Common	1	C
N	IC611	2105 6351	IC/MOS	XC62FP5501PR	Common	1	C
	Q503,520	2259 2597	TRANSISTOR/DIGITAL	DTC114YKA-T146	Common	2	C
	Q502	2250 1281	TRANSISTOR	2SA1179M5,M6,M7-TB	Common	1	C
N	Q601	2254 0522	FET	XP161A02A1PR	Common	1	C
N	Q630	2251 0927	TRANSISTOR	2SB1124S-TD	Common	1	C
	Q602,604	2259 2072	FET	2SJ317NY-TR	Common	2	C
	Q605	2250 1449	TRANSISTOR	2SD1624T-TD	Common	1	C
N	Q623	2254 0568	FET	2SK1657-T1B	Common	1	C
	Q624	2254 0308	FET	2SJ185-T1B	Common	1	C
	LCD ASSY (A140809*1)						
N	3	6420 8700	PCB ASSY	A140817D*1	BN-10	1	B
N	4	6420 8980	HEAT SEAL	A341710-1	BN-10	2	B
N	5	6420 8990	HEAT SEAL	A341711-1	BN-10	1	B
N	6	6420 9080	LSI/TAB	A341911*1	BN-10	2	B
N	7	6420 9090	LSI/TAB	A341912*2	BN-10	1	B
N	8	6420 9200	TAPE/HS	A442765-1	BN-10	2	B
N	9	6420 9210	TAPE/HS	A442766-1	BN-10	1	B
N	10	3335 6592	LCD	CD1127-TS	BN-10	1	B
N	11	6421 5640	TAPE/SHIELD	A443123-1	BN-10	1	B

Notes: N – New parts
Q – Quantity
R – Rank

R – A: Essential
B: Stock recommended
C: Others
X: No stock recommended

N	Item	Code No.	Parts Name	Specification	Applicable	Q	R
	LCD ASSY (A140814*1)						
N	3	6420 9490	PCB ASSY	A140817D*2	BN-20	1	B
N	12	5861 3593	ELECTRO LUMINESCENECE	EL-Z457	BN-20	1	B
N	4	6420 8980	HEAT SEAL	A341710-1	BN-20	2	B
N	5	6420 8990	HEAT SEAL	A341711-1	BN-20	1	B
N	6	6420 9080	LSI/TAB	A341911*1	BN-20	2	B
N	7	6420 9090	LSI/TAB	A341912*1	BN-20	1	B
N	8	6420 9200	TAPE/HS	A442765-1	BN-20	2	B
N	9	6420 9210	TAPE/HS	A442766-1	BN-20	1	B
N	10	3335 6593	LCD	CD1128-TN	BN-20	1	B
N	11	6421 5640	TAPE/SHIELD	A443123-1	BN-20	1	B
	UPPER CASE A ASSY (A140807)						
N	13	6420 8820	CASE/UPPER	A140726-1	Commom	1	C
N	14	6420 8830	CASE/LOWER	A140728-1	BN-10	1	C
N	14	6420 9440	CASE/LOWER	A140728-2	BN-20	1	C
N	15	6420 8850	FRAME/INNER CASE	A140732-1	Common	1	C
N	16	6420 8680	LCD ASSY	A140809A*1	BN-10	1	B
N	16	6420 9360	LCD ASSY	A140814B*1	BN-20	1	B
N	17	6420 8910	CASE/UPPER	A241025-1	BN-10	1	C
N	17	6420 9450	CASE/UPPER	A241025-2	BN-20	1	C
N	18	6420 9000	PCB/FPC	A341755-1	Common	1	C
N	19	3122 2380	BUZZER	EFB-S55C41A8	Common	1	C
N	20	6421 5680	GUIDE/SHAFT	A443094-1	Common	1	C
N	21	6421 5701	TAPE/SHIELD	A443126A-1	Common	1	C
N	22	6421 5711	TAPE/SHIELD	A443127A-1	Common	1	C
N	23	6421 6670	CONTACT HOLD/SUB ASSY	A342102*1	Common	1	C
N	24	6421 5730	TAPE/SHIELD	A443130-1	BN-20	2	C
	UPPER CASE A ASSY (A140808)						
N	25	6420 8801	BUTTON	A140724A-1	Common	1	C
N	26	6420 8810	CASE/UPPER	A140725-1	BN-10	1	C
N	26	6420 9400	CASE/UPPER	A140725-2	BN-20	1	C
N	27	6420 8890	RUBBER/CONTACT	A140751-1	Common	1	C
N	28	6420 8650	PCB ASSY	A140806G*1	BN-10	1	B
N	28	6420 9350	PCB ASSY	A140806G*2	BN-20	1	B
N	29	6420 8900	SHEET/CONTACT	A241022-1	Common	1	C
N	30	6420 8970	SHEET/CONTACT	A241040-1	BN-10	1	C
N	30	6420 9410	SHEET/CONTACT	A241040-2	BN-20	1	C
N	31	6420 9010	BUTTON	A341756-1	Common	1	C
N	32	6420 9100	BUTTON	A442745-1	Common	1	C
N	33	6420 9110	BUTTON	A442746-1	BN-10	1	C
N	33	6420 9420	BUTTON	A442746-2	BN-20	1	C
N	34	6420 9170	SPRING/BATTERY	A442755-1	Common	1	X
N	35	6421 2410	BUTTON	A341955-1	Common	1	C
N	36	6421 5670	TAPE/SHIELD	A443096-1	Common	1	C

Notes: N – New parts
Q – Quantity
R – Rank

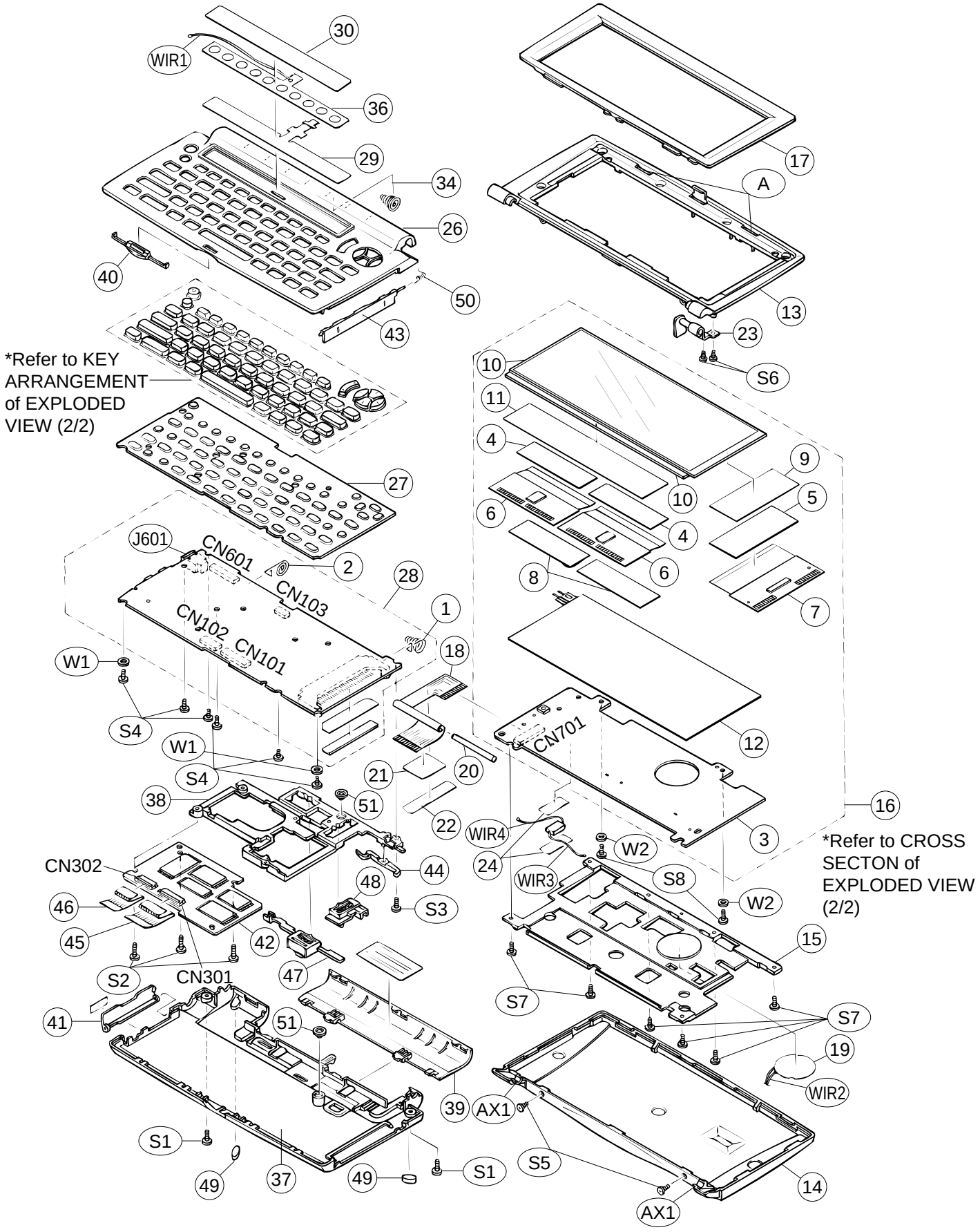
R – A: Essential
B: Stock recommended
C: Others
X: No stock recommended

N	Item	Code No.	Parts Name	Specification	Applicable	Q	R
	TOTAL ASSY						
N	37	6420 8840	CASE/LOWER	A140729-1	BN-10	1	C
N	37	6420 9480	CASE/LOWER	A140729-2	BN-20	1	C
N	38	6420 8860	FRAME/INNER CASE	A140733-1	Common	1	C
N	39	6420 8920	COVER/BATTERY	A241026-1	Common	1	B
N	40	6420 8950	BUTTON	A241029-1	Common	1	C
N	41	6420 8960	PLATE/CONTACT	A241030-1	Common	1	C
N	42	6420 8730	PCB ASSY	A241123D*1	BN-10	1	B
N	42	6420 9320	PCB ASSY	A241123D*2	BN-20	1	B
N	43	6420 9021	PLATE/CONTACT	A341760A-1	Common	1	C
N	44	6420 9030	LEVER/LOCK	A341765-1	Common	1	C
N	45	6420 9220	CONNECTOR/FFC	A442768-1	Common	1	C
N	46	6420 9230	CONNECTOR/FFC	A442769-1	Common	1	C
N	47	6420 8780	KNOB ASSY	A442934*1	Common	1	C
N	48	6420 8790	KNOB ASSY	A442935*1	Common	1	C
N	49	6420 9130	RUBBER/FOOT	A442751-1	Common	2	C
N	50	6420 9261	SPRING	A442943A-1	Common	1	X
	51	6391 8831	RUBBER/KEY	A311024A-1	Common	2	C
	OTHERS						
N	52	1014 9838	FLOPPY DISK/3.5INCH	MF2HDCSOZ456A01A	Common	1	C
N	53	1014 9839	FLOPPY DISK/3.5INCH	MF2HDCSOZ456A02A	Common	1	C
N	54	6420 8630	CRADLE	A140805D*1	Common	1	C
		Parts prices will be informed separately by Parts Price List.					

Notes: N – New parts
Q – Quantity
R – Rank

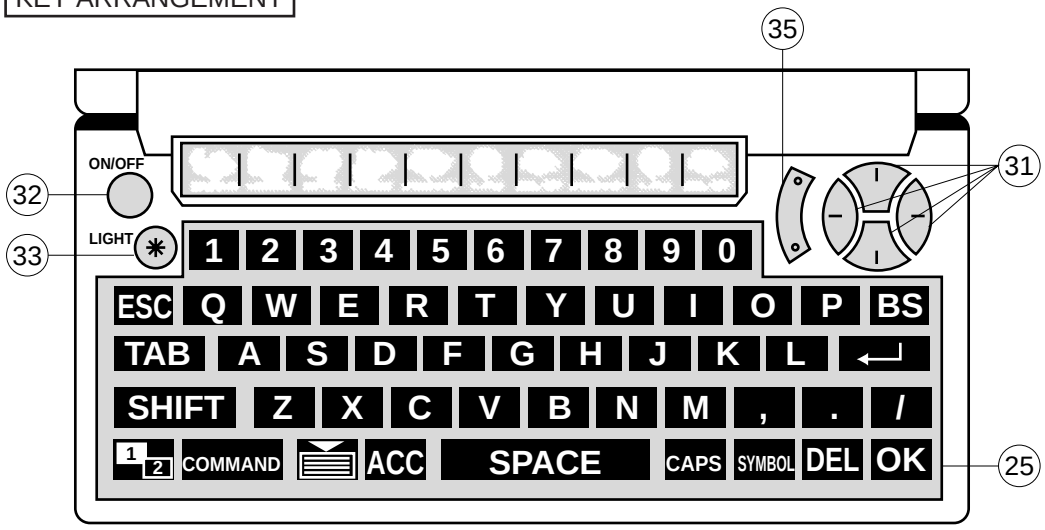
R – A: Essential
B: Stock recommended
C: Others
X: No stock recommended

13. EXPLODED VIEW (1/2)



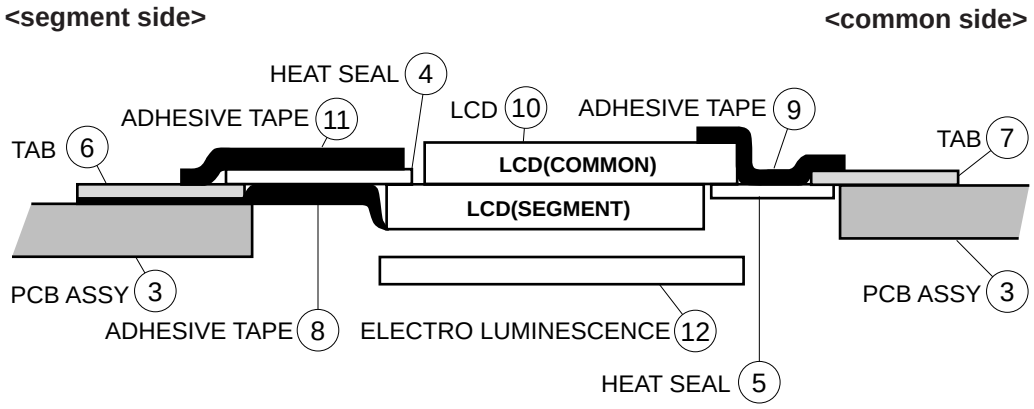
13. EXPLODED VIEW (2/2)

KEY ARRANGEMENT


35
ON/OFF
32
LIGHT
33
31
1 2 3 4 5 6 7 8 9 0
ESC Q W E R T Y U I O P BS
TAB A S D F G H J K L
SHIFT Z X C V B N M , . /
1 2 COMMAND ACC SPACE CAPS SYMBOL DEL OK
25

✻ BN-10: ON/OFF→ON, No light mark, LIGHT→OFF

CROSS SECTION of LCD ASSY (16)


<segment side>
<common side>
HEAT SEAL 4
ADHESIVE TAPE 11
LCD 10
ADHESIVE TAPE 9
TAB 6
TAB 7
LCD(COMMON)
LCD(SEGMENT)
PCB ASSY 3
PCB ASSY 3
ADHESIVE TAPE 8
ELECTRO LUMINESCENCE 12
HEAT SEAL 5

✻ BN-10: No electro luminescence

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